CONTENTS

SAMS PHOTOFACT* SET No. 371

*TRADEMARK

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRADE NAME	MODEL	SET AND FOLDER NO.
Andrea	W69P (Spacemaster Deluxe)	371-1
Bulova	100, 110	371-2
Fairchild	255A	371-3
Hoffman	BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U) Tel. Rec.	371-4
Motorola	Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y) Color Tel. Rec.	371-5
Motorola	397	371-6
RCA Victor	9-BT-9E, H, J (Ch. RC-1164A)	371-7
Sentinel	Ch. U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series) Tel. Rec.	371-8
Silvertone	4244, 42441 (Ch. 137.916, -A)	371-9
Sylvania	1202, 2301 (Ch. 1-615-1, -2)	371-10
Sylvania	3202GR, LG, PI, 3303TA, 3304E, RE, TA (Ch. 1-612-2)	371-11
Telefunken	TW560 Record Changer	371-12
Trav-ler	1700, 1710, U (Ch. 72916, 73016) Tel. Rec.	371-13
Truetone	D3784A, D3785A	371-14

© 1957 Howard W. Sams & Co., Inc.

ANDREA
MODEL W69P

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

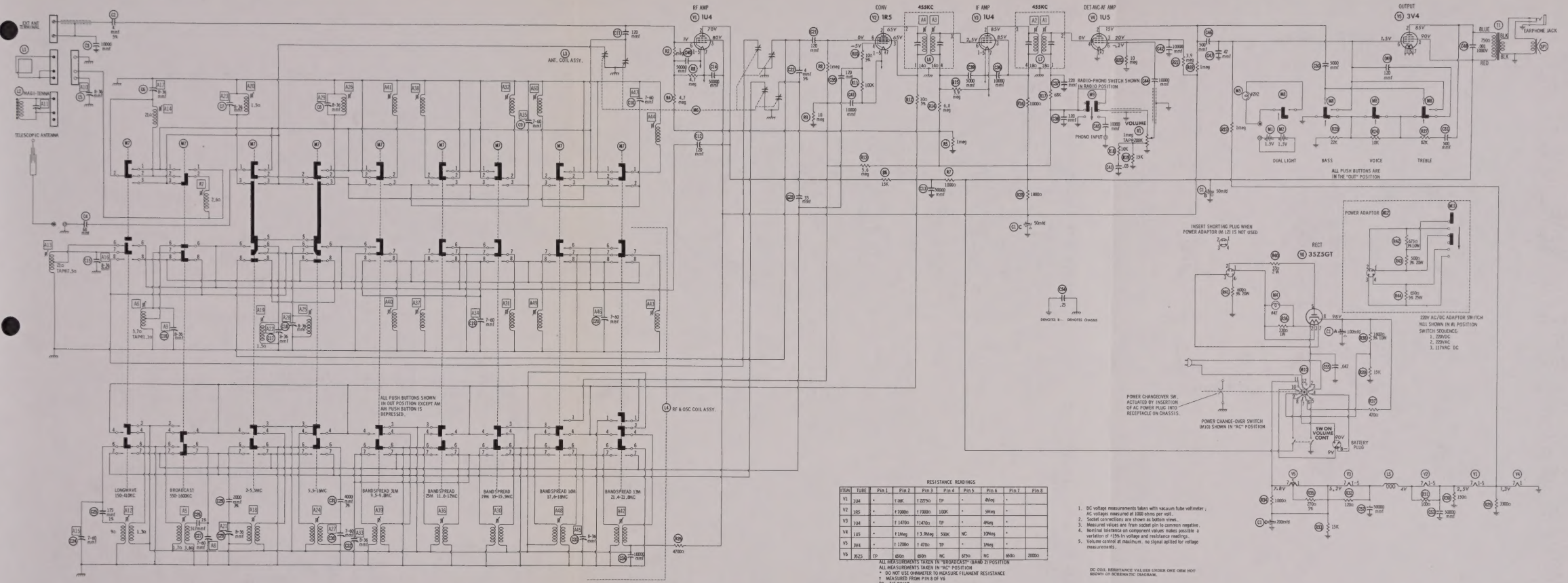
ANDREA
MODEL W69P

TRADE NAME	Andrea Model W69P "Spacemaster Deluxe"
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City 1, N. Y.
TYPE SET	Three Power Portable 9 Band AM Receiver
TUBES (Six)	Types 1U4 RF Amplifier, 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply in Pack Form. (220 Volts AC-DC Operation With Adapter)
RATING	.265 Amp. @ 117 Volts AC (or) 62MA @ 9 Volts DC & 7MA @ 90 Volts DC

TUNING RANGE

Band 1. 150KC-410KC	Band 6. 11.6MC-12MC
Band 2. 550KC-1600KC	Band 7. 15MC-15.5MC
Band 3. 2MC-5.5MC	Band 8. 17.6MC-18MC
Band 4. 5.5MC-16MC	Band 9. 21.4MC-21.8MC
Band 5. 9.5MC-9.8MC	

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America



RESISTANCE READINGS

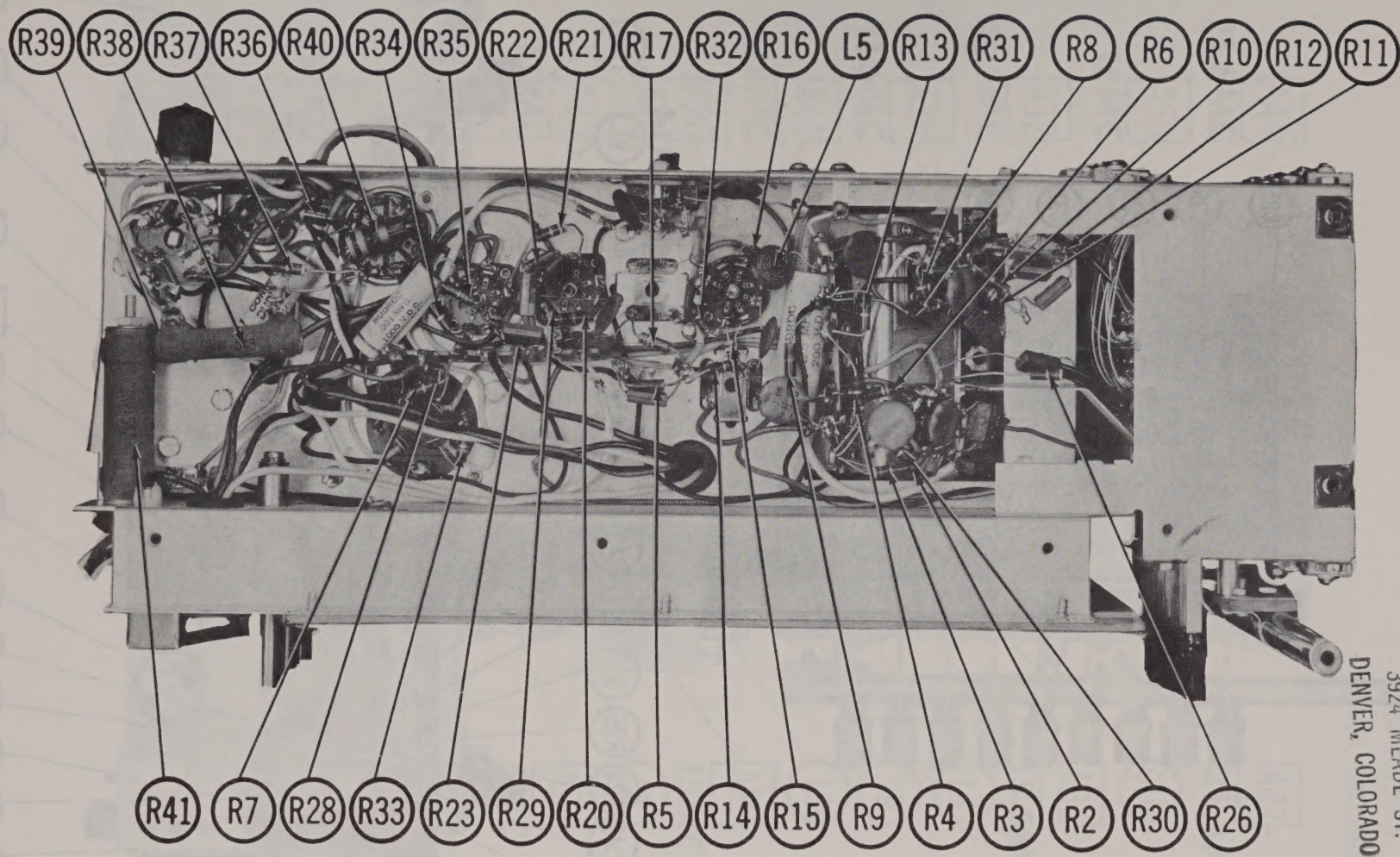
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	1U4	*	†4K	†2275Ω	TP	*	4Meg	*	
V2	1R5	*	†7000Ω	†7000Ω	100K	*	5Meg	*	
V3	1U4	*	†1470Ω	†1470Ω	TP	*	4Meg	*	
V4	1U5	*	†1Meg	†3.9Meg	500K	NC	10Meg	*	
V5	3V4	*	†1200Ω	†470Ω	TP	*	1Meg	*	
V6	35Z5	TP	650Ω	650Ω	NC	675Ω	NC	650Ω	2000Ω

ALL MEASUREMENTS TAKEN IN "BROADCAST" (BAND 2) POSITION
ALL MEASUREMENTS TAKEN IN "AC" POSITION
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM PIN 8 OF V6
TP TIE POINT
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

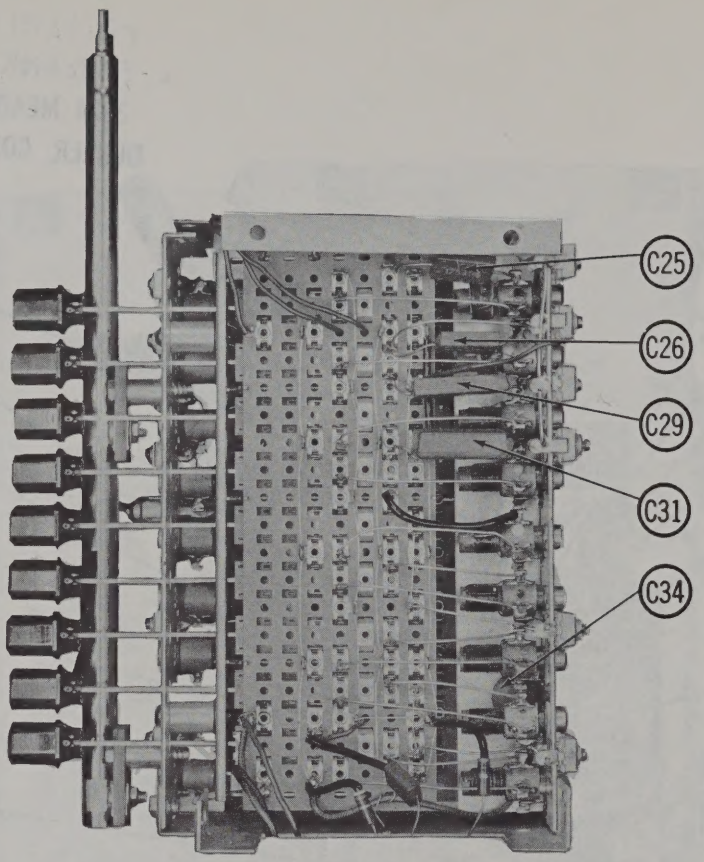
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1953

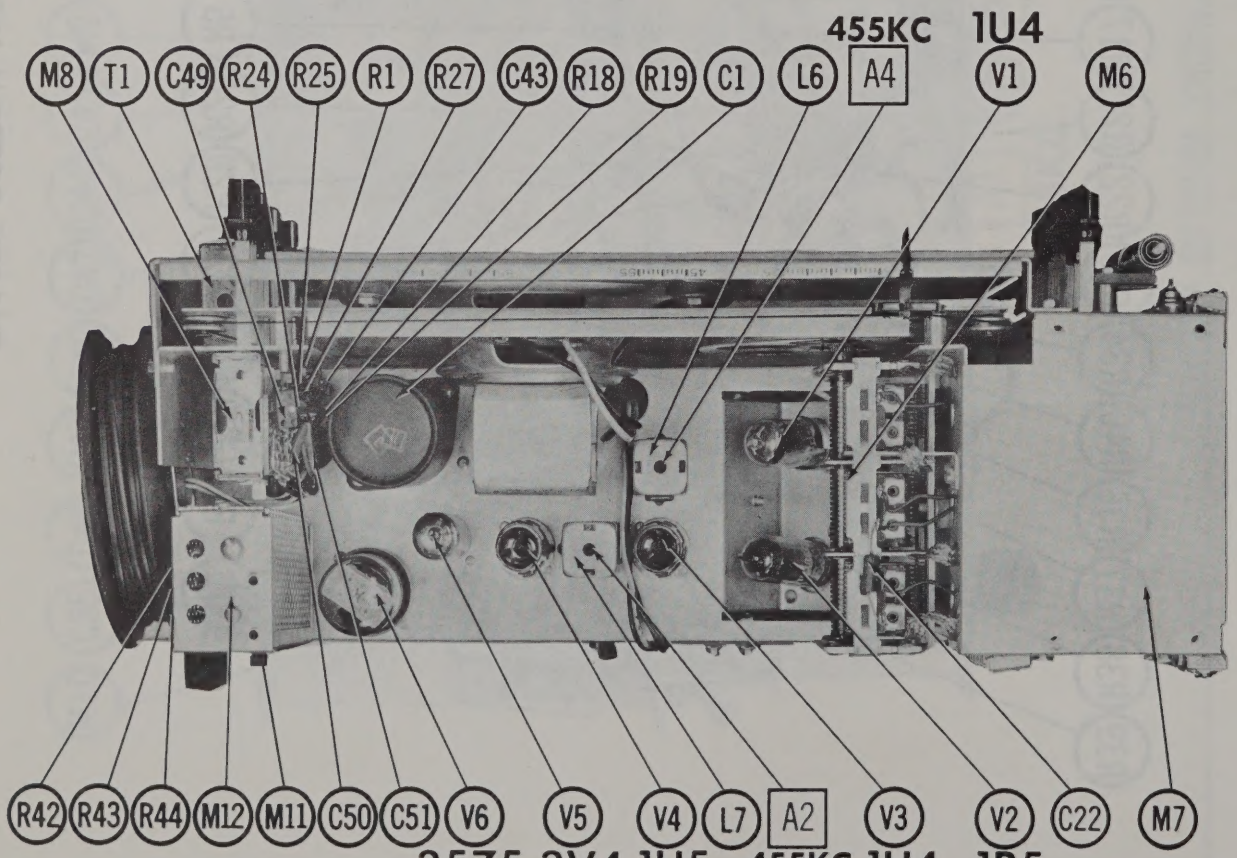


PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

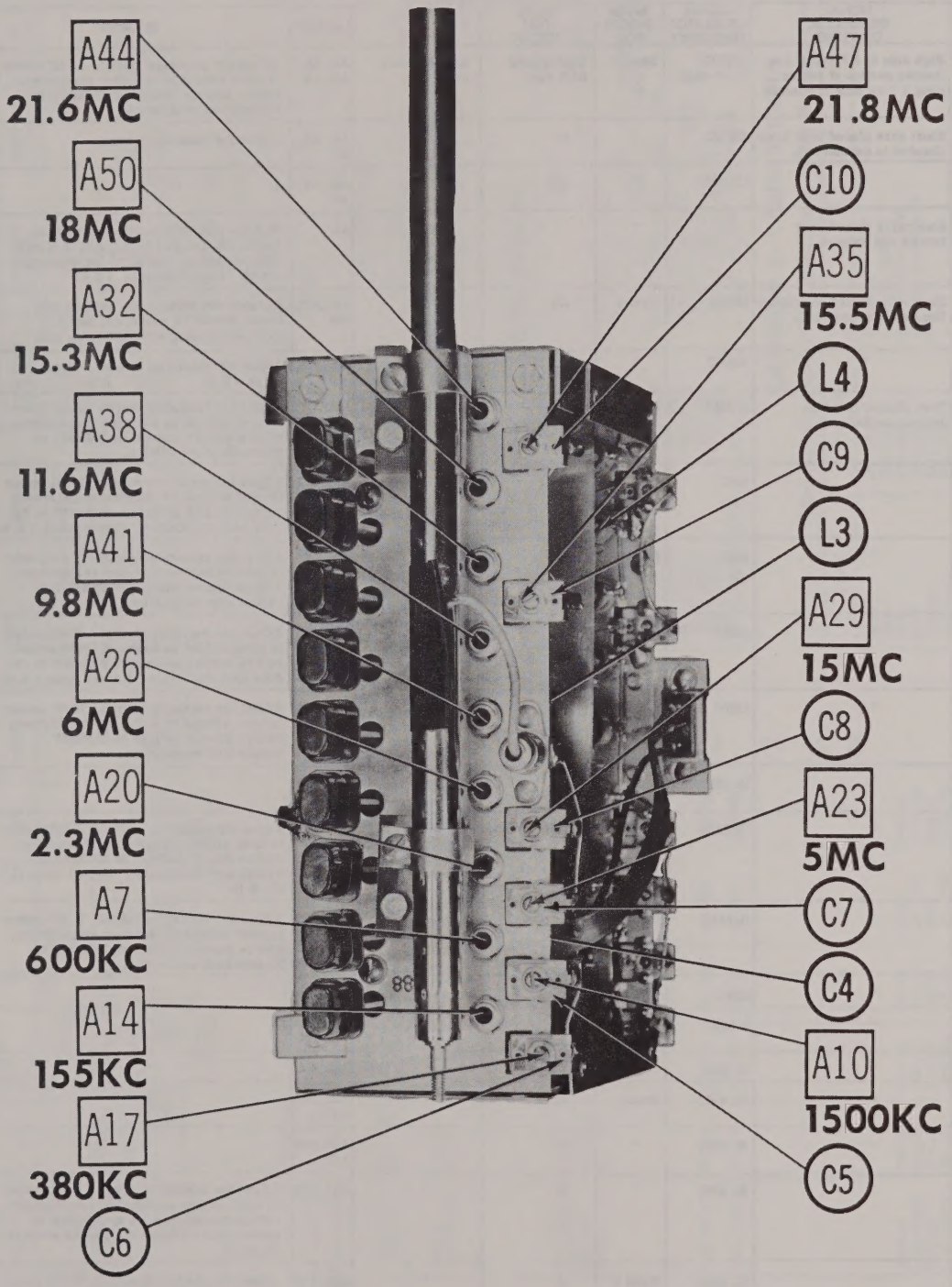


TUNING UNIT - SIDE VIEW



CHASSIS - TOP VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TUNING UNIT - FRONT VIEW

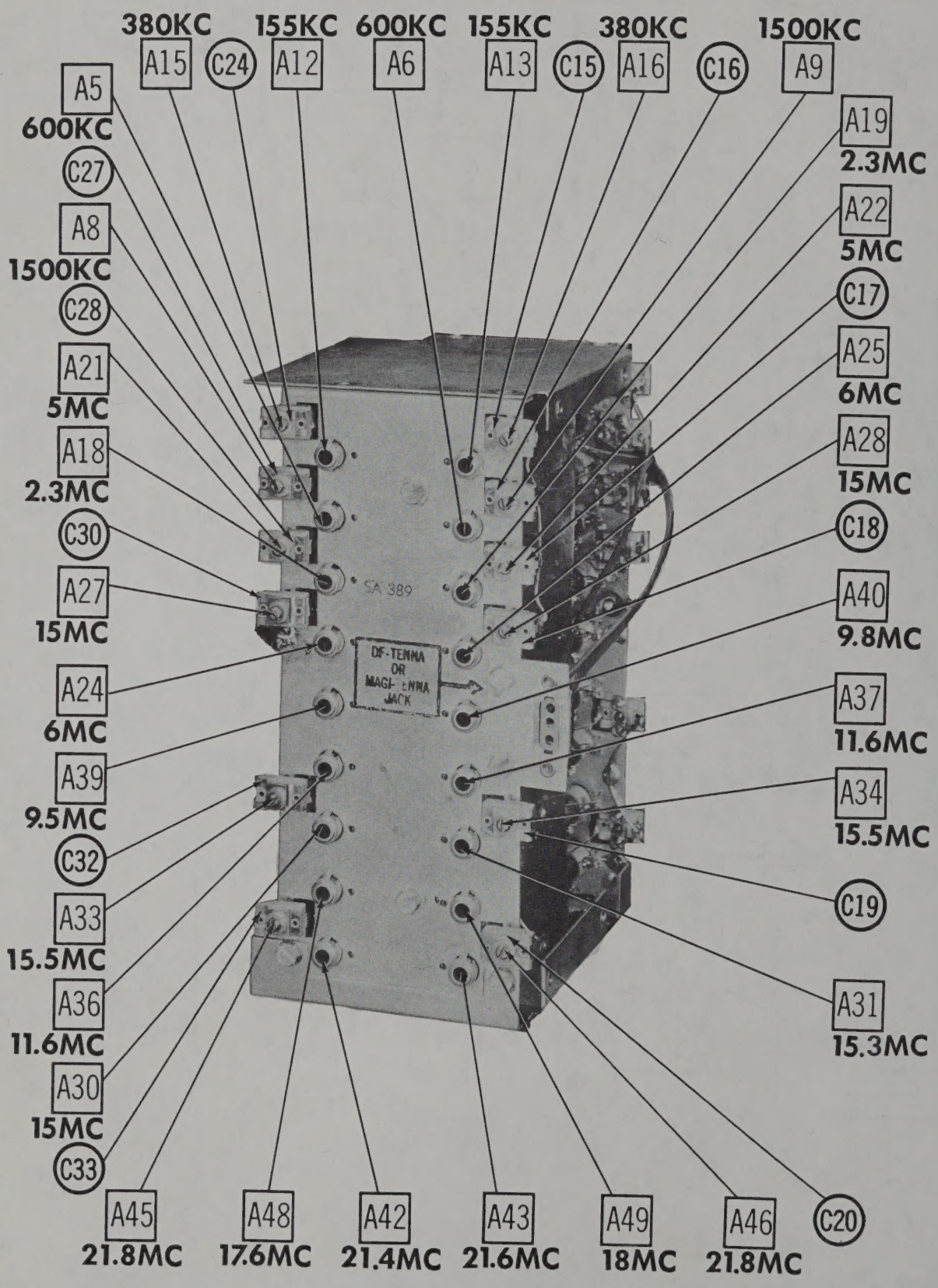
ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Complete alignment should be made in order given. For reference purposes pushbuttons are, from top to bottom, Band 1(LW), Band 2 (BC), etc. thru Band 9.
Calibration points are located at top of dial backplate. These are used for dial pointer setting throughout alignment. Disconnect whip antenna.

BC, LW & SW ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.001MFD	High side to RF Stator Lug (center section of tuning gang.) Low side to chassis.	455KC (400∿ Mod.)	Band 2	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2		Short wire placed near Loop (located in cabinet lid).	600KC	"	18	"	A5, A6, A7	Adjust for maximum output.
3		"	1500KC	"	89½	"	A8, A9, A10	"
4		Short wire placed near ferrite rod antenna	"	"	"	"	A11	Replace loop with ferrite rod antenna. Adjust A11 (located in long end of plastic tube containing loop stick) for maximum output. Repeat steps 2, 3 & 4.
5		Short wire placed near Loop (located in cabinet lid).	155KC	Band 1	12½	"	A12, A13, A14	Remove rod antenna and replace with loop. Adjust for maximum output. Rock tuning gang while adjusting A12.
6		"	380KC	"	90½	"	A15, A16, A17	Adjust for maximum output. Repeat steps 5 & 6.
7	22MMF & 22Ω in series	Thru dummy to whip antenna socket	2.3MC	Band 3	21½	Across voice coil	A18, A19, A20	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
8	"	"	5MC	"	86½	"	A21, A22, A23	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. Repeat steps 7 & 8.
9	"	"	6MC	Band 4	14	"	A24, A25, A26	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
10	"	"	15MC	"	91½	"	A27, A28 A29	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. Repeat steps 9 & 10.
11	"	"	15MC	Band 7	7	"	A30, A31, A32	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
12	"	"	15.5MC	"	91	"	A33, A34 A35	"
13	"	"	15.3MC	"	53	"	A31, A32	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. Repeat steps 11, 12, & 13.
14	"	"	11.6MC	Band 6	7	"	A36, A37 A38	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to Reduce hum modulation.
15	"	"	12MC	"	90	"	A37, A38	"
16	"	"	9.5MC	Band 5	15	"	A39, A40 A41	"
17	"	"	9.8MC	"	88	"	A40, A41	"
18	"	"	21.4MC	Band 9	22	"	A42, A43 A44	"
19	"	"	21.8MC	"	90	"	A45, A46 A47	"
20	"	"	21.6MC	"	51	"	A43, A44	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. Repeat steps 18, 19, & 20.
21	"	"	17.6MC	Band 8	11	"	A48, A49 A50	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
22	"	"	18MC	"	90	"	A49, A50	"



TUNING UNIT - REAR VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	1U4	
V2	Converter	1R5	
V3	IF Amplifier	1U4	
V4	Det. -AVC-AF Amp.	1U5	
V5	Output	3V4	
V6	Rectifier	35Z5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ANDREA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲100	150	HCE-1944			FP312.5		T-065	R2426 *
B	■50	150				TC49		FMT-1550	
C	▲50	150							
D	200	50							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	4.0		HCM-1637							5%
C3	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	68		HCM-1644	1468-000068	D6-680	5W5Q68	ED-68	UC-5468	1FM-468	
C5	1.7-25		T50200							
C6	1.7-25		T50200							
C7	1.7-25		T50200							
C8	1.7-25		T50200							
C9	7-60		T50410							
C10	7-60		T50410							
C11	120		HCM-1639	1468-00012	DD-121	5W5T12	ED-120	UC-5312	1FM-312	
C12	120		HCM-1639	1468-00012	DD-121	5W5T12	ED-120	UC-5312	1FM-312	
C13	50000		HCC-1951	BPD-05	DF-503	CUB6S5		GEM-615	5HK-S5	
C14	50000		HCC-1951	BPD-05	DF-503	CUB6S5		GEM-615	5HK-S5	
C15	1.7-25		T50200							
C16	1.7-25		T50200							
C17	1.7-25		T50200							
C18	1.7-25		T50200							
C19	7-60		T50410							
C20	7-60		T50410							
C21	120		HCM-1639	1468-00012	D6-121	5W5T12	GP-120	UC-5312	1FM-312	
C22	4.0		HCM-1637							5%
C23	33		HCM-1641	1468-000033	D6-330	5W5Q33	ED-33	UC-5433	1FM-433	
C24	7-60		T50410							
C25	175		HCM-1645							1%
C26	517		HCM-1646							1%
C27	7-60		T50410							
C28	1.7-25		T50200							
C29	2000		HCM-1642							3%
C30	7-60		T50410							
C31	4000		HCM-1643							3%
C32	1.7-25		T50200							
C33	1.7-25		T50200							
C34	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C35	120	500	HCM-1639	1468-00012	D6-121	5W5T12	ED-120	UC-5312	1FM-312	
C36	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C37	220	500	HCM-1640	1468-00022	D6-221	5W5T22	ED-220	UC-5322	1FM-322	
C38	120	500	HCM-1639	1468-00012	D6-121	5W5T12	ED-120	UC-5312	1FM-312	
C39	5000		HCC-1945	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C40	50000		HCC-1951	BPD-05	DF-503	CUB6S5		GEM-615	5HK-S5	
C41	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C42	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C43	.03	100	HCT-1041	BPD-03	DF-303	CUB2S3		GEM-213	2TM-S3	
C44	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C45	10000		HCC-1943	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C46	500	500	HCM-1625A	BPD-0005	D6-501	5W5T5	ED-500	UC-535	1FM-35	
C47	47	500	HCM-1638	1468-000047	D6-470	5W5Q47	ED-47	UC-5447	1FM-447	
C48	.001	1000	HCT-1040	P1088N-001	DD-102	CUB10D1	HD15-1000	GEM-1021	10TM-D1	
C49	120	500	HCM-1639	1468-00012	D6-121	5W5T12	ED-120	UC-5312	1FM-312	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ANDREA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Antenna	SA-383				
L2	Loop Stick	SA-384				Includes 1. 7-25MMF Trimmer
L3	Ant. Coil Assembly	SA-388				Includes C6, 7, 8, 9, and 10
L4	RF and Osc. Coil Ass'y.	SA-389				Includes C15, 16, 17, 18, 19, 20, 24, 27, 28, 30, 32, and 33.
L5	Fil. Choke	SA-385	19-3036	TV-180	6176	38 Microhenries
L6	Input IF	SA-386	16-6758	BC-352	12-C1	
L7	Output IF	SA-387	16-6758	BC-353	12-C2	

BATTERIES

ITEM No.	VOLTAGE	ANDREA PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	RAY-O-VAC "A"	RAY-O-VAC "B"	NOTES
M1	1.5V		2R		950		M-13		2LP		
M2	1.5V		"		"		"		"		

BATTERIES

ITEM No.	VOLTAGE	ANDREA PART No.	REPLACEMENT DATA BURGESS "A-B" Pack	EVEREADY "A-B" Pack	MALLORY "A-B" Pack	RAY-O-VAC "A-B" Pack	NOTES
M3	90B "A" 90V "B"	FM-5423	G6B60	752	A-400	AB995	

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M4	Dial Light		#47 (AC-DC Operation)
M5	Dial Light		#292 (Battery Operation)
M6	Tuning Cap.	HCV-2124	6 Gang (Ant. 10-475MMF, RF 10-475MMF, Osc. 10-475MMF (Ant. 8-13MMF, RF 8-13MMF, Osc. 8-13MMF)
M7	Switch	FM-5376	Band Selector Ass'y. (Slide Type)
M8	Switch	FM-5377	Tone Ass'y. (Slide Type)
M9	Switch	FM-5386	Phono-Radio (Slide Type-DPDT)
M10	Switch	FM-5387	Power Changeover (Rotary Wafer Type)
M11	Switch	FM-5403	Voltage Selector (Slide Type)
M12	Adapter Ass'y.	SUB-15	Voltage Selector (Includes M11)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	FM-5418	Tuning
Knob	FM-5417	On-Off-Volume
Knob	FM-5416	Pushbutton (Red)
Knob	FM-5415	Pushbutton (Black)
Cabinet	FM-5380	
Dial Scale	FM-5373	
Dial Pointer	FM-5406	
Antenna	FM-5382	Telescopic
Earphone Set	FM-5421	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C50	5000		HCC-1945	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C51	500	500	HCM-1625A	BPD-0005	D6-501	5W5T5	ED-500	UC-535	1FM-35	
C52	50000		HCC-1951	BPD-05	DF-503	CUB6S5		GEM-615	5HK-S5	
C53	50000		HCC-1951	BPD-05	DF-503	CUB6S5		GEM-615	5HK-S5	
C54	.25	200	HCT-1038	P288N-25		CUB2P25		GEM-2025	2TM-P25	
C55	.047	400	HCT-1039	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ANDREA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	GRV-848	BT-72	A47F1-1Meg	Q13-137X	UT-440	Volume, Tap@ 200K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-2	SWE-20	76-2	US-27	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ANDREA PART No.	IRC PART No.	
R2	1Meg		GRC-331	BTS-1Meg	
R3	4.7Meg		GRC-343	BTS-4.7Meg	
R4	4.7Meg		GRC-343	BTS-4.7Meg	
R5	1Meg		GRC-331	BTS-1Meg	
R6	15K		GRC-290	BTS-15K	
R7	1000Ω		GRC-210	BTS-1000Ω	
R8	1Meg		GRC-331	BTS-1Meg	
R9	10Meg		GRC-208	BTS-10Meg	
R10	10Ω 5%		GRC-253	BTS-10 5%	
R11	100K		GRC-258	BTS-100K	
R12	10Ω 5%		GRC-253	BTS-10 5%	
R13	5.6Meg		GRC-344	BTS-5.6Meg	
R14	6.8Meg		GRC-340	BTS-6.8Meg	
R15	3.9Meg		GRC-342	BTS-3.9Meg	
R16	1000Ω		GRC-210	BTS-1000	
R17	68K		GRC-204	BTS-68K	
R18	10K		GRC-304	BTS-10K	
R19	15K		GRC-290	BTS-15K	
R20	10Meg		GRC-208	BTS-10Meg	
R21	3.9Meg		GRC-342	BTS-3.9Meg	
R22	1Meg		GRC-331	BTS-1Meg	
R23	1Meg		GRC-331	BTS-1Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ANDREA PART No.	IRC PART No.	
R24	10K		GRC-304	BTS-10K	
R25	22K		GRC-201	BTS-22K	
R26	4700Ω		GRC-205	BTS-4700	
R27	82K		GRC-341	BTS-82K	
R28	1800Ω		GRC-346	BTS-1800	
R29	3300Ω		GRC-220	BTS-3300	
R30	150Ω		GRC-202	BTS-150	
R31	100Ω		GRC-216	BTS-100	
R32	120Ω		GRC-217	BTS-120	
R33	15K		GRC-290	BTS-15K	
R34	1000Ω		GRC-210	BTS-1000	
R35	270Ω 5%		GRC-316	BTS-270 5%	
R36	330Ω	1	GRC-345	BTA-330	
R37	470Ω		GRC-213	BTS-470	
R38	1600Ω 3%	10	GRW-548		
R39	15K		GRC-290	BTS-15K	
R40	33Ω	2	GRC-347		
R41	600Ω 3%	20	GRW-547		
R42	675Ω 3%	10	GRW-549		
R43	500Ω 3%	20	GRW-550		
R44	650Ω 5%	25	GRW-551		

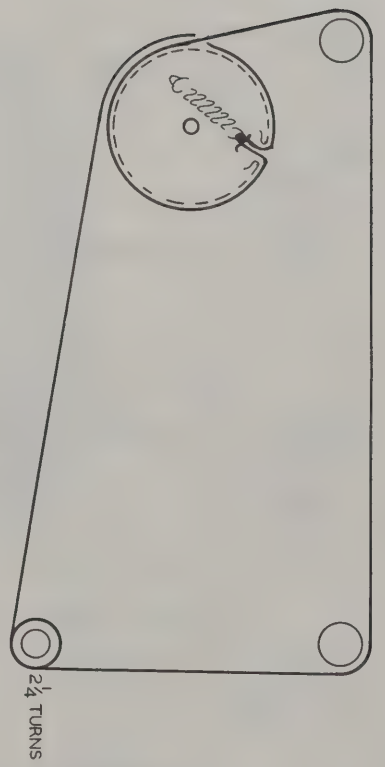
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ANDREA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	11.5K	3-4Ω	ST-3071	Z1117 ①	A-2933①	A-3879 ①	24S52 ①	S-17X ①	① Drill new mounting hole.

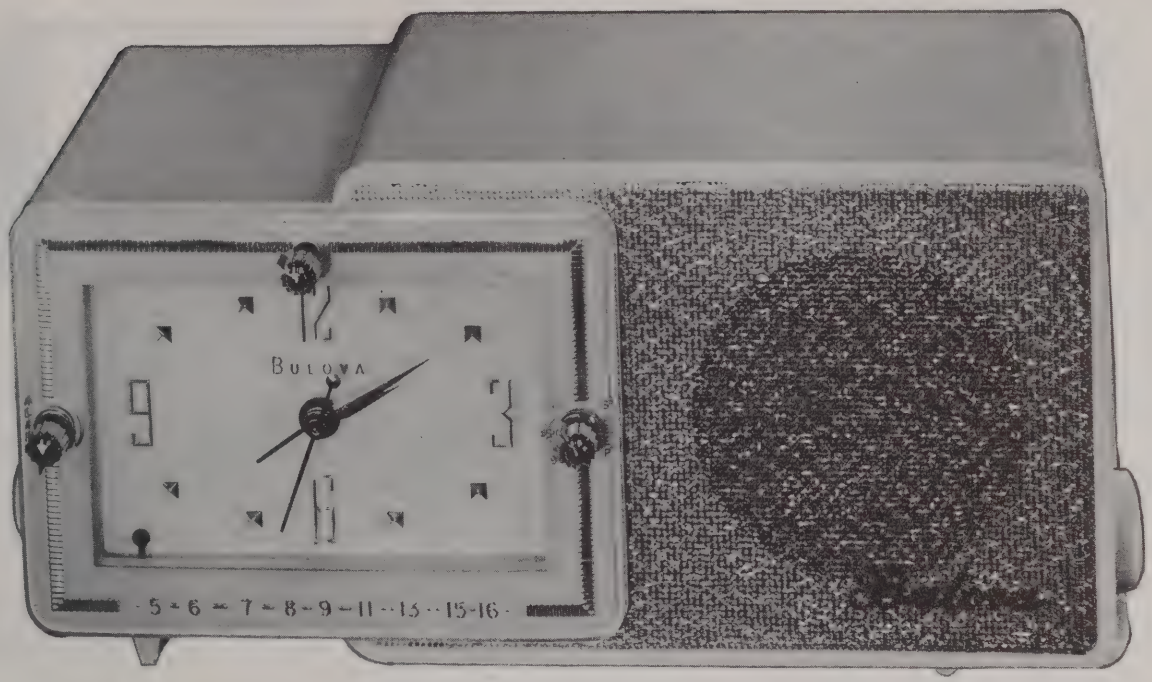
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ANDREA PART No.	QUAM PART No.	
SP1	6½"	PM	3-4Ω	SL-4027	6A31	

DIAL CORD STRINGING



BULOVA
MODELS 100, 110



MODEL 100

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

BULOVA
MODELS 100, 110

TRADE NAME	Bulova Models 100, 110
MANUFACTURER	Electronics Guild, Inc., Sunrise Highway, Valley Stream, Long Island, N. Y.
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det. -AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles
RATING	.31 Amp. @ 117 Volts AC (31 Watts)
TUNING RANGE—BROADCAST	535-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in the same relative position to chassis as when the receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2	"	"	1640KC	"	"	A5	"
3		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

BULOVA MODEL 100

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BULOVA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150		PRS150V5050	BBRD5515	TCD49	TDLD-9	MTD-1550	TVA-2453
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BULOVA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C3	.01	600		BPD-01	DD-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C4	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C5	.1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BULOVA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½		B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not req.	FS-3	Not req.	Not req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BULOVA PART No.	IRC PART No.	
R2	22K			BTS-22K	
R3	150Ω			BTS-150	
R4	3.3Meg			BTS-3.3Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BULOVA PART No.	IRC PART No.	
R5	150Ω			BTS-150	
R6	1500Ω	1		BTA-1500	

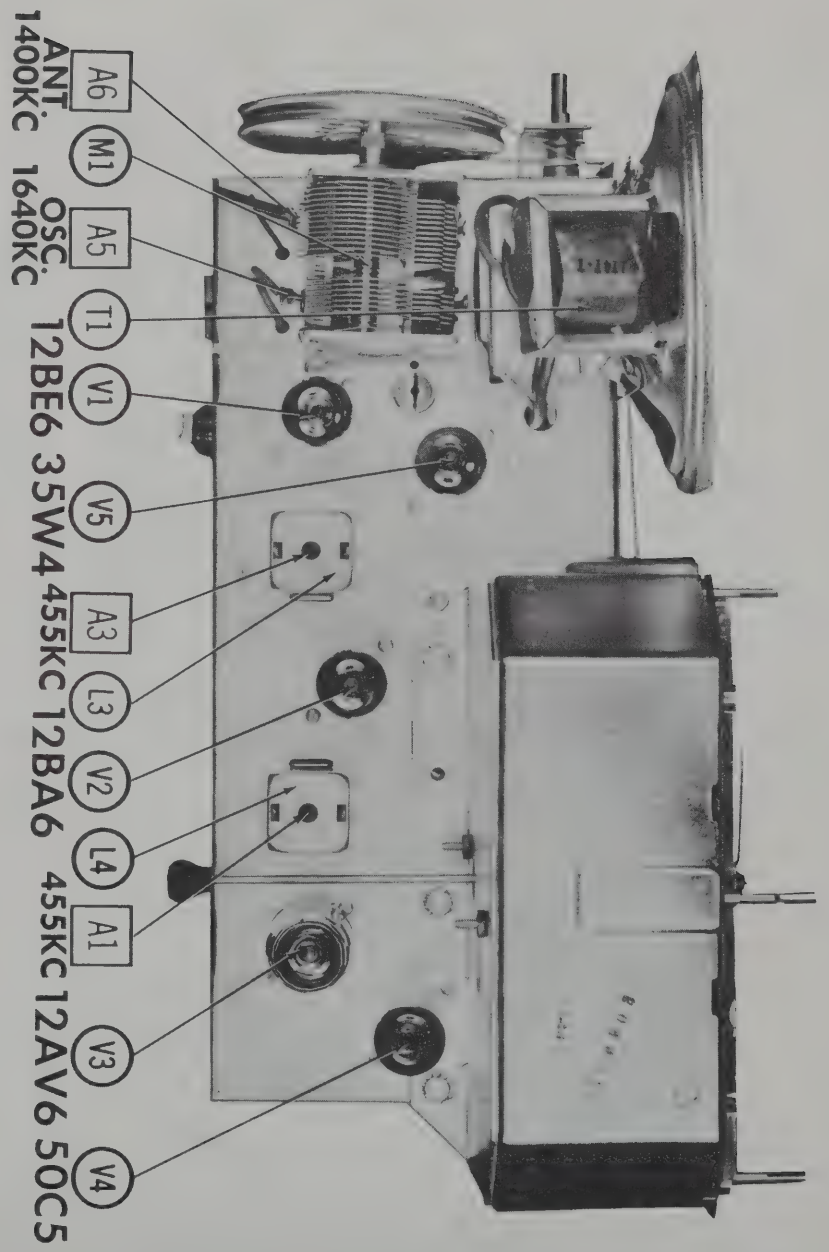
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BULOVA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4000Ω Tap@ 500Ω	3-4Ω	1141-1	Z1105 ①	A-3031 ①	A-3336 ①	24S51A ①	S-16X ①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BULOVA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	26-1E	4A1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

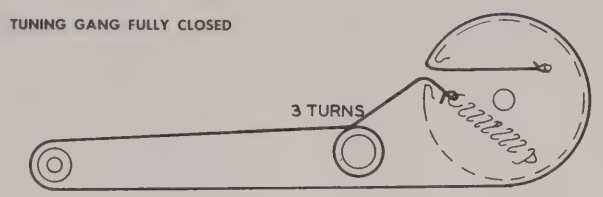
ITEM No.	USE	REPLACEMENT DATA				NOTES
		BULOVA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Antenna					Includes cabinet back
L2	Osc. Coil		14-1073	BC-393	69-OSC	
L3	Input IF		16-6758	BC-352	12-C1	
L4	Output IF		16-6758	BC-353	12-C2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BULOVA PART No.	REPLACEMENT DATA	
K1	Det.-Audio Coup. Net.	5000MMF, 250MMF, 2000MMF, 220MMF, 470K, 470K, 6.8Meg		Aerovox	PA-113-1
				Centralab	PC-150A
				Cornell-Dubilier	116TM1
				Erie	1408-01
				Sprague	DT-5

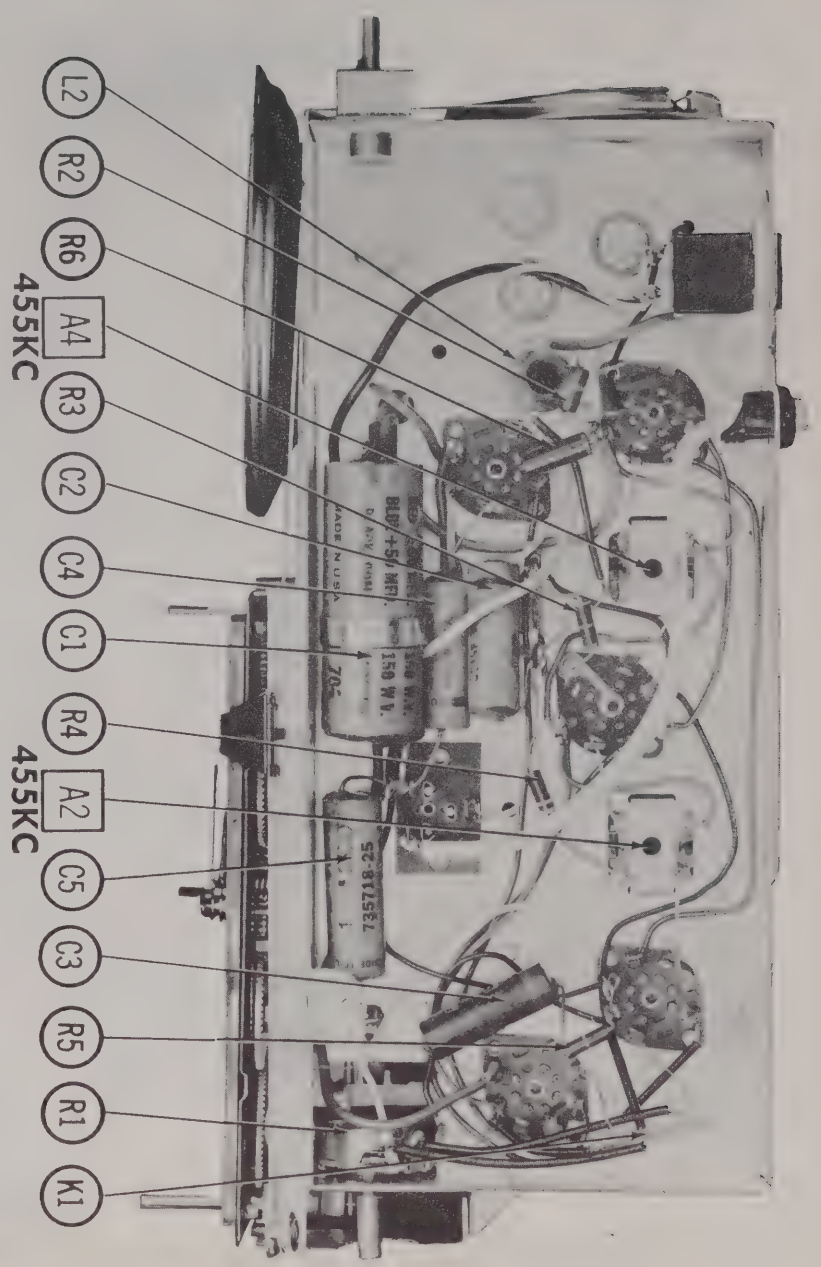
MISCELLANEOUS

ITEM No.	PART NAME	BULOVA PART No.	NOTES
M1	Tuning Cap.		2 Gang (Ant. 22-380MMF, Osc. 17-125MMF)

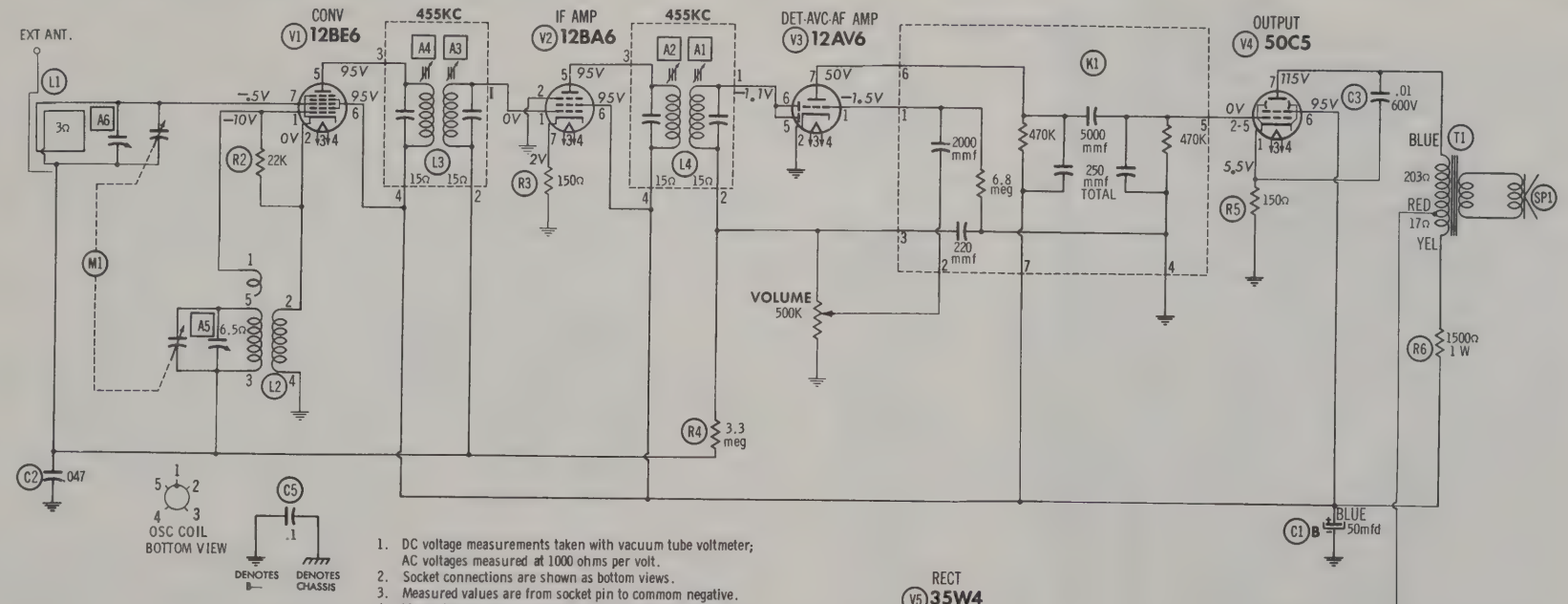


DIAL CORD STRINGING

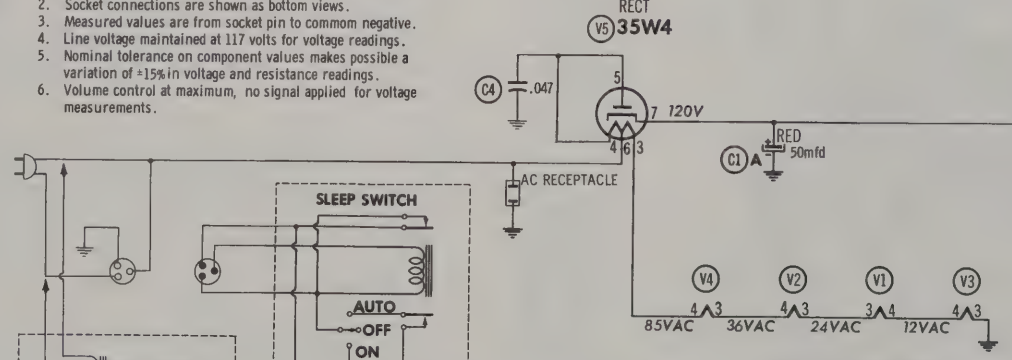
CHASSIS—BOTTOM VIEW



BULOVA MODEL 100



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	24Ω	12Ω	†1500Ω	†1500Ω	3.8Meg
V2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500K	500K	†470K
V4	50C5	150Ω	470K	36Ω	75Ω	470K	†1500Ω	†203Ω
V5	35W4	NC	TP	75Ω	105Ω	105Ω	95Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

FAIRCHILD
MODEL 255A

FAIRCHILD
MODEL 255A

TRADE NAME	Fairchild Model 255A
MANUFACTURER	Fairchild Recording Equipment Co., 10-40 45th. Ave., Long Island City, N.Y.
TYPE SET	AC Operated 30 Watt Audio Amplifier
TUBES (Five)	Types 6AB4 AF Amplifier, 12AU7 AF Amp.-Phase Inv., (2) EL-34 Output, GZ-34 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .92 Amp. @ 117 Volts AC (95 Watts)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

FAIRCHILD MODEL 255A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6AB4	
V2	AF Amp. -Phase Inv.	12AU7	
V3	Output	EL-34	

ITEM No.	USE	TYPE	NOTES
V4	Output	EL-34	
V5	Rectifier	GZ-34	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FAIRCHILD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	450		AFH4-93	DO920	FP428.4	TMQ-79	Q-325	TVL-4720
B	▬40	450							
C	30	350							
D	▲30	350							
C2	20	150		PRS150V20	BBR20-150	TC45	TD-20-150	FM-1520	TVA-1410
C3	20	150		PRS150V20	BBR20-150	TC45	TD-20-150	FM-1520	TVA-1410

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FAIRCHILD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.25	400		P488N-25		CUB4P25		GEM-4025	4TM-P25	
C5	82			SI 82	D6-820	LT6Q82	GP-82	UC-5482	5GA-Q82	
C6	.25	200		P288N-25		CUB2P25		GEM-2025	2TM-P25	
C7	50			SI 50	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	
C8	100			SI 100	D6-101	LT6T1	GP-100	UC-531	5GA-T1	
C9	.25	400		P488N-25		CUB4P25		GEM-4025	4TM-P25	
C10	.25	400		P488N-25		CUB4P25		GEM-4025	4TM-P25	
C11	.015	600		P688N-015		CUB6S15		GEM-6115	6TM-S15	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FAIRCHILD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	100K	½	BA211-1481	B-40	A47-100K-S	Q11-128	U41	Gain
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	100K	½	BA211-1481	B-40	A47-100K-S	Q11-128	U41	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	10K	½	BA211-1482	B-14	A47-10K-S	Q11-116	U20	Bias
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

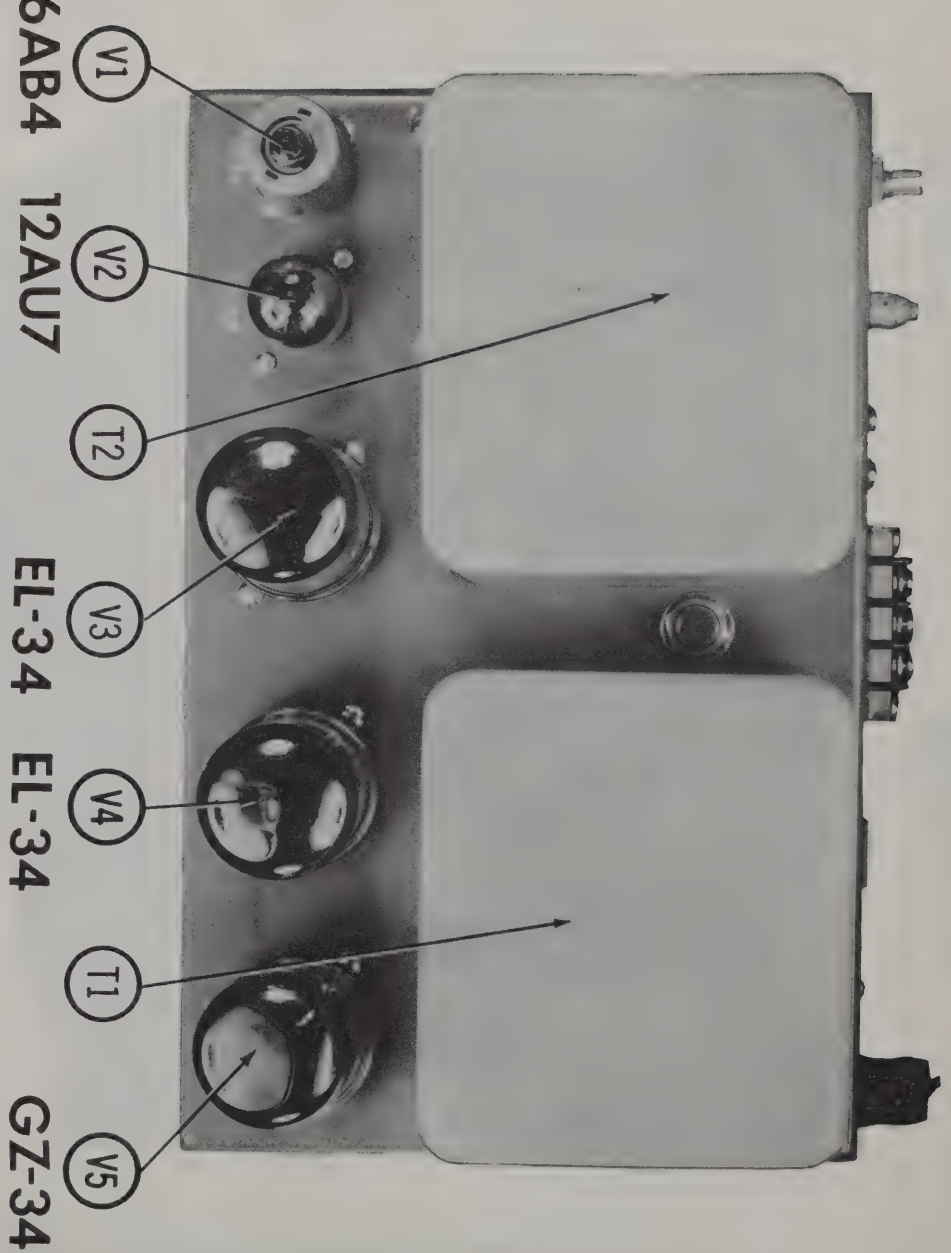
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FAIRCHILD PART No.	IRC PART No.	
R4	270K			BTS-270K	
R5	1500Ω			BTS-1500	
R6	39K			BTS-39K	
R7	27K			BTS-27K	
R8	1Meg			BTS-1Meg	
R9	82K			BTS-82K	
R10	220K	1		BTA-220K	
R11	6200Ω 5%			BTS-6200 5%	
R12	43K 5%	1		BTA-43K 5%	Note 1

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FAIRCHILD PART No.	IRC PART No.	
R13	43K 5%	1		BTA-43K 5%	Note 1
R14	100K			BTS-100K	
R15	100K			BTS-100K	
R16	8200Ω			BTS-8200	
R17	10K			BTS-10K	
R18	33K			BTS-33K	
R19	27K			BTS-27K	
R20	15K	1		BTA-15K	
R21	75Ω	5		PW7-75	

Note 1. R12 and R13 must be matched pair within 2%.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	FAIRCHILD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .92A	660VCT @ .92A Tap @ 80V @ .002A	5VAC @ 1.7A	6.3VCT @ 3.5A						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	FAIRCHILD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6600Ω	16Ω Tap @ 8Ω		H4103 ①			22S39 ①	HSM-186 ①	① Drill new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	FAIRCHILD PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.002A		1159	RS50	8S20	50	

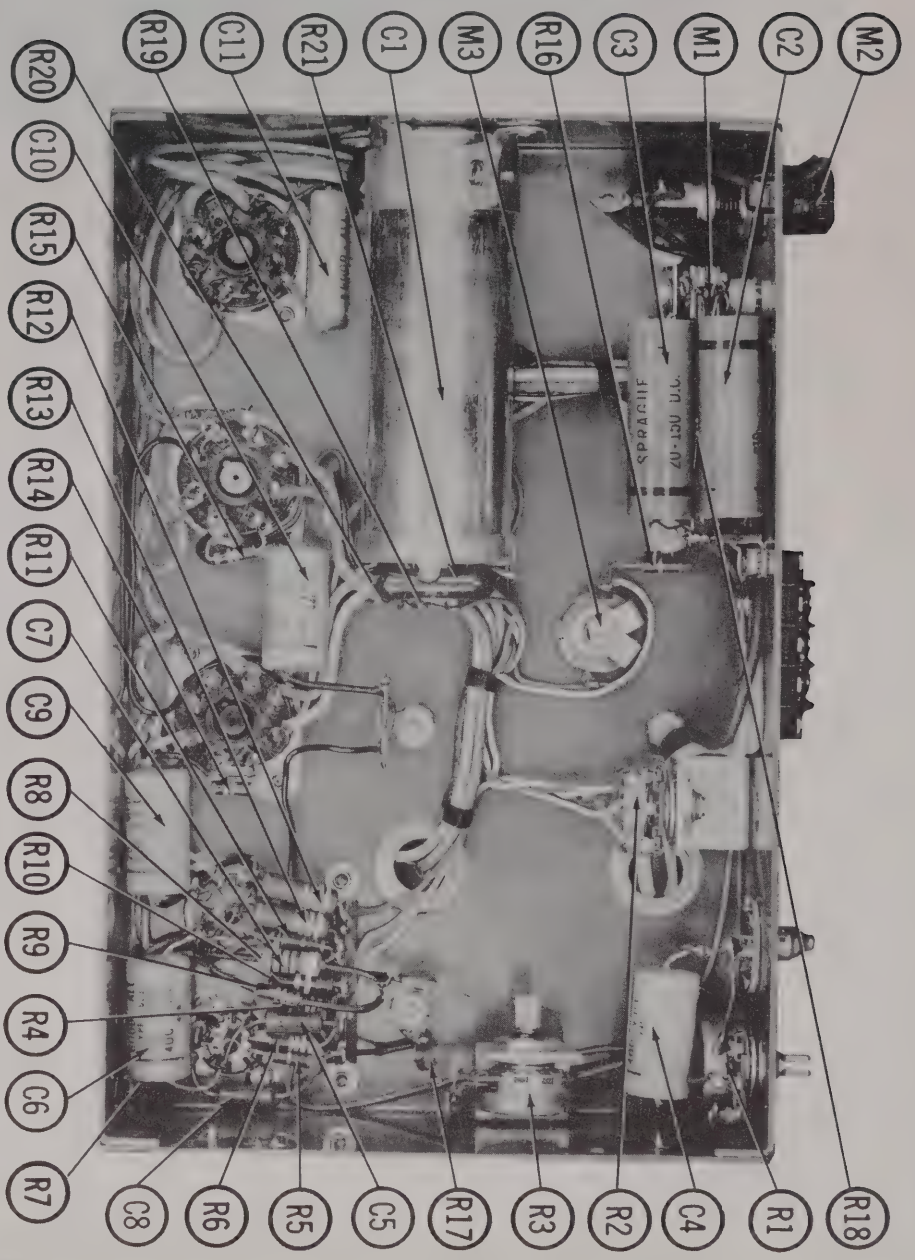
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FAIRCHILD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	2A 250V			312002. (3AG 2A)	342001	AGC 3	HKP

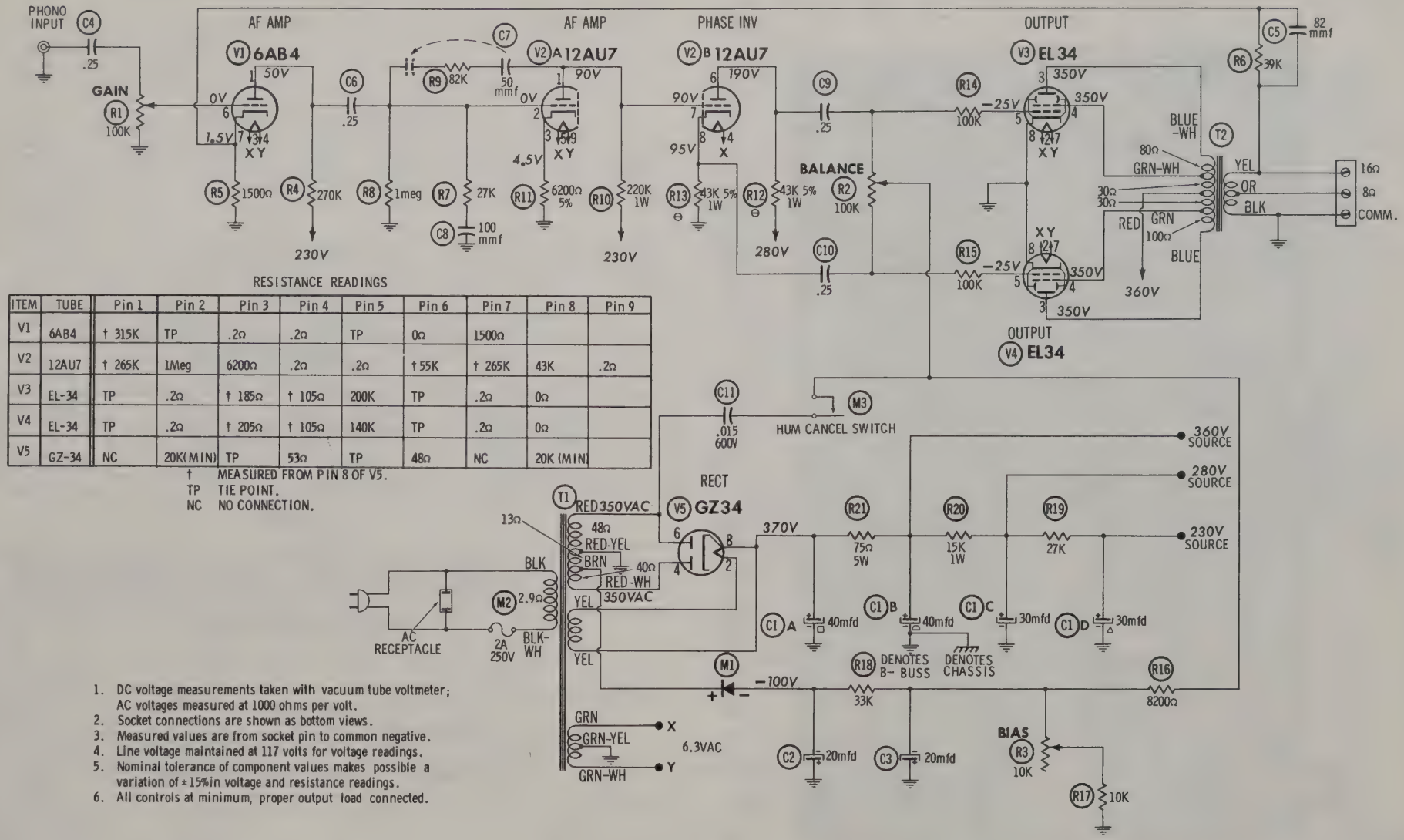
MISCELLANEOUS

ITEM No.	PART NAME	FAIRCHILD PART No.	NOTES
M3	Switch		Hum Cancel

CHASSIS—BOTTOM VIEW



FAIRCHILD MODEL 255A



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AB4	† 315K	TP	.2Ω	.2Ω	TP	0Ω	1500Ω		
V2	12AU7	† 265K	1Meg	6200Ω	.2Ω	.2Ω	† 55K	† 265K	43K	.2Ω
V3	EL-34	TP	.2Ω	† 185Ω	† 105Ω	200K	TP	.2Ω	0Ω	
V4	EL-34	TP	.2Ω	† 205Ω	† 105Ω	140K	TP	.2Ω	0Ω	
V5	GZ-34	NC	20K(MIN)	TP	53Ω	TP	48Ω	NC	20K (MIN)	

† MEASURED FROM PIN 8 OF V5.
TP TIE POINT.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

HOFFMAN MODELS BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL GT1144U (Ch. 326U)

TRADE NAME	Hoffman	MODELS	CHASSIS
		BT1144, BW1144, GT1144, PT1144, SG1144	326
		BT1144U, BW1144U, GT1144U, PT1144U, SG1144U	326U
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, California		
TYPE SET	Television Receiver		
TUBES	Fifteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 100 Watts, 1 Amp. @ 117 Volts AC	
TUNING RANGE	Channel 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

INDEX

Alignment Instructions 6
Drive Cord Stringing (UHF) 14
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 16
Parts List and Descriptions 12, 13, 14
Photographs
- Cabinet-Rear View 16
- Capacitor & Alignment Identification 4, 9
- Chassis-Top View 7

Photographs (Con't)
- RF Tuner 14, 15
- Resistor & Inductor Identification 5, 8

Resistance Measurements 10
Servicing in the Field 1
Schematic (Alternate Tuner) 11
Schematic (TV) 2
Tube Failure Check Chart 3
Tube Placement Chart (Bottom View) 10
Tube Placement Chart (Top View) 3

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America

DATE 9-57 SET 371 FOLDER 4

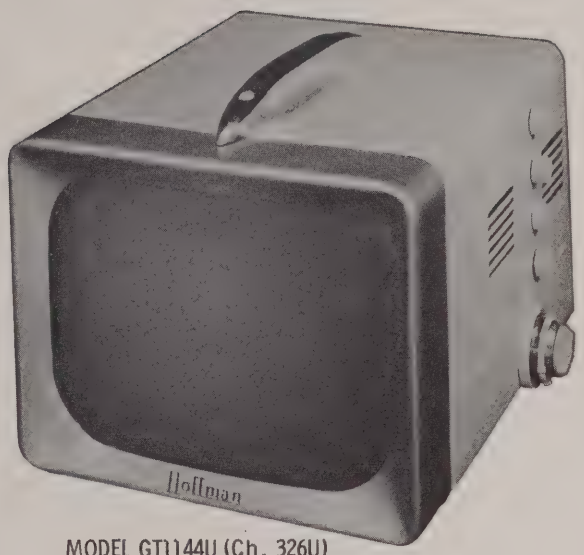
HOFFMAN MODELS BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U)

HOFFMAN MODELS BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from the side.
2. Remove 6 metal screws and the rear cover.
3. Remove the rear metal screw from the handle.
4. Remove 2 speaker leads from the audio output transformer, the picture tube socket and the ion trap.
5. Remove 4 chassis bolts from the bottom.
6. Partially remove the chassis, remove the HV lead and yoke, and remove the chassis.
7. Remove 2 hex nuts and the speaker.



MODEL GT1144U (Ch. 326U)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODELS	CHASSIS
BT1144, BW1144, GT1144, PT1144, SG1144	326
BT1144U, BW1144U, GT1144U, PT1144U, SG1144U	326U

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove one metal screw from the top of the cabinet. Remove 2 metal screws from the bottom holding the front of the cabinet. Remove the front. NOTE: Use only mild soap and water to clean safety glass.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 2 or 6 and 10. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSES

A 7.5Ω fusible resistor (R78) is used for LV power supply protection. (For location, see tube placement chart).

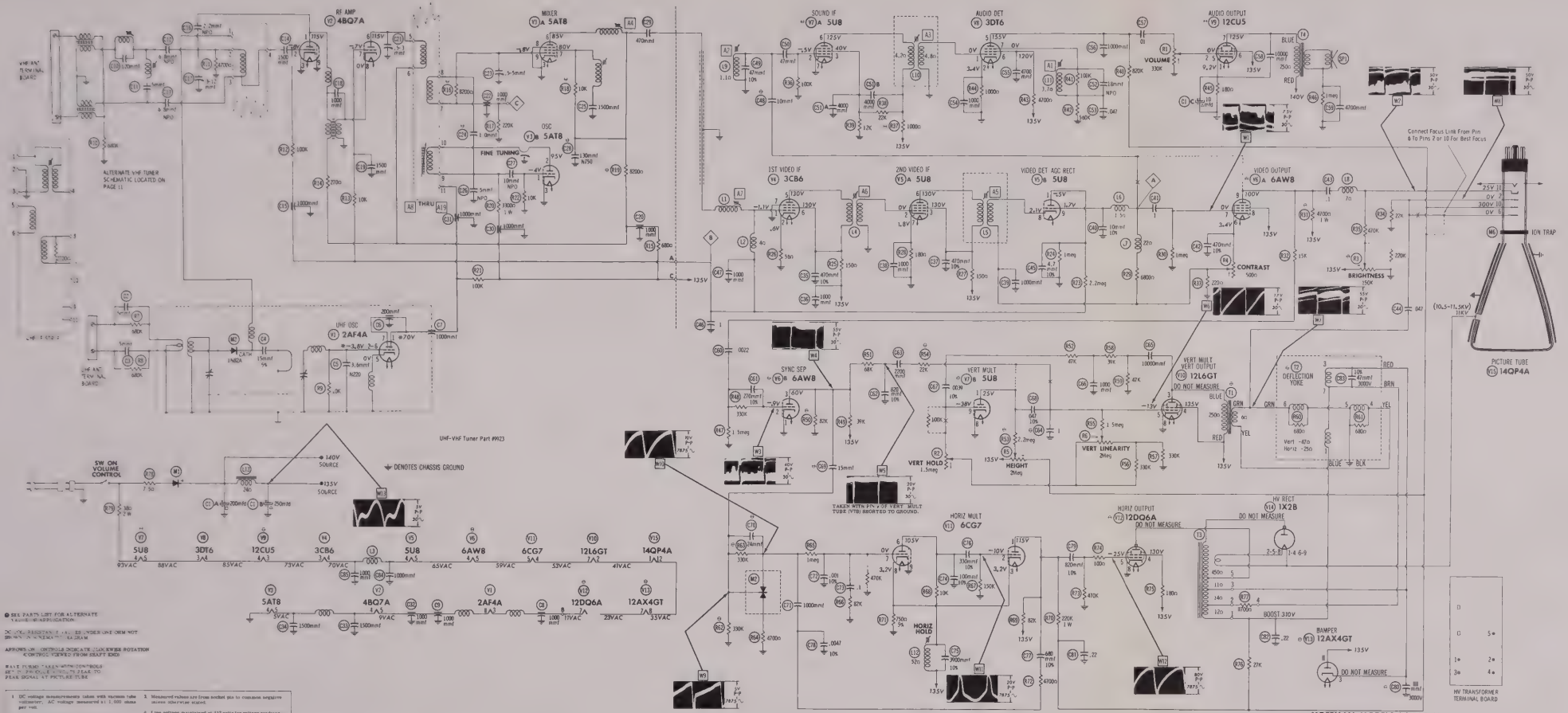
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOFFMAN MODELS BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America



SEE PARTS LIST FOR ALTERNATE VALUES OF APPLICATION

DC VOLTAGE RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END

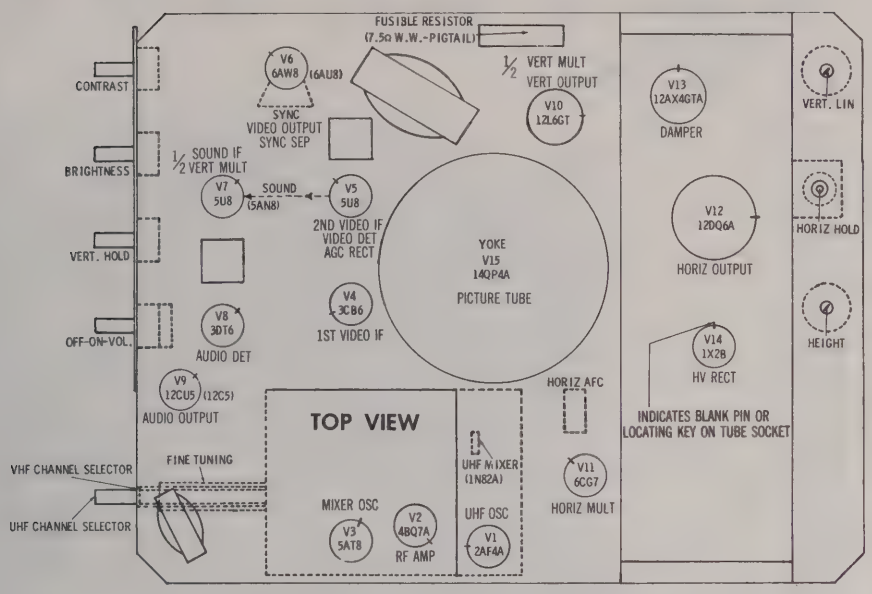
FINE TUNING "ALL-WAVE" CONTROLS SET IN PROPER POSITION FOR TO PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

HOFFMAN MODELS BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U)

TUBE PLACEMENT CHART



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

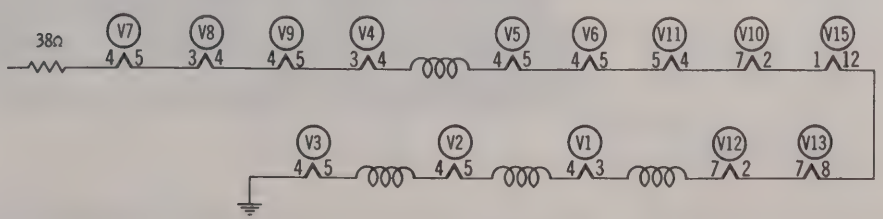
POWER SUPPLY FAILURE
No raster, no sound - Fusible Resistor (R78), Rectifier (M1)

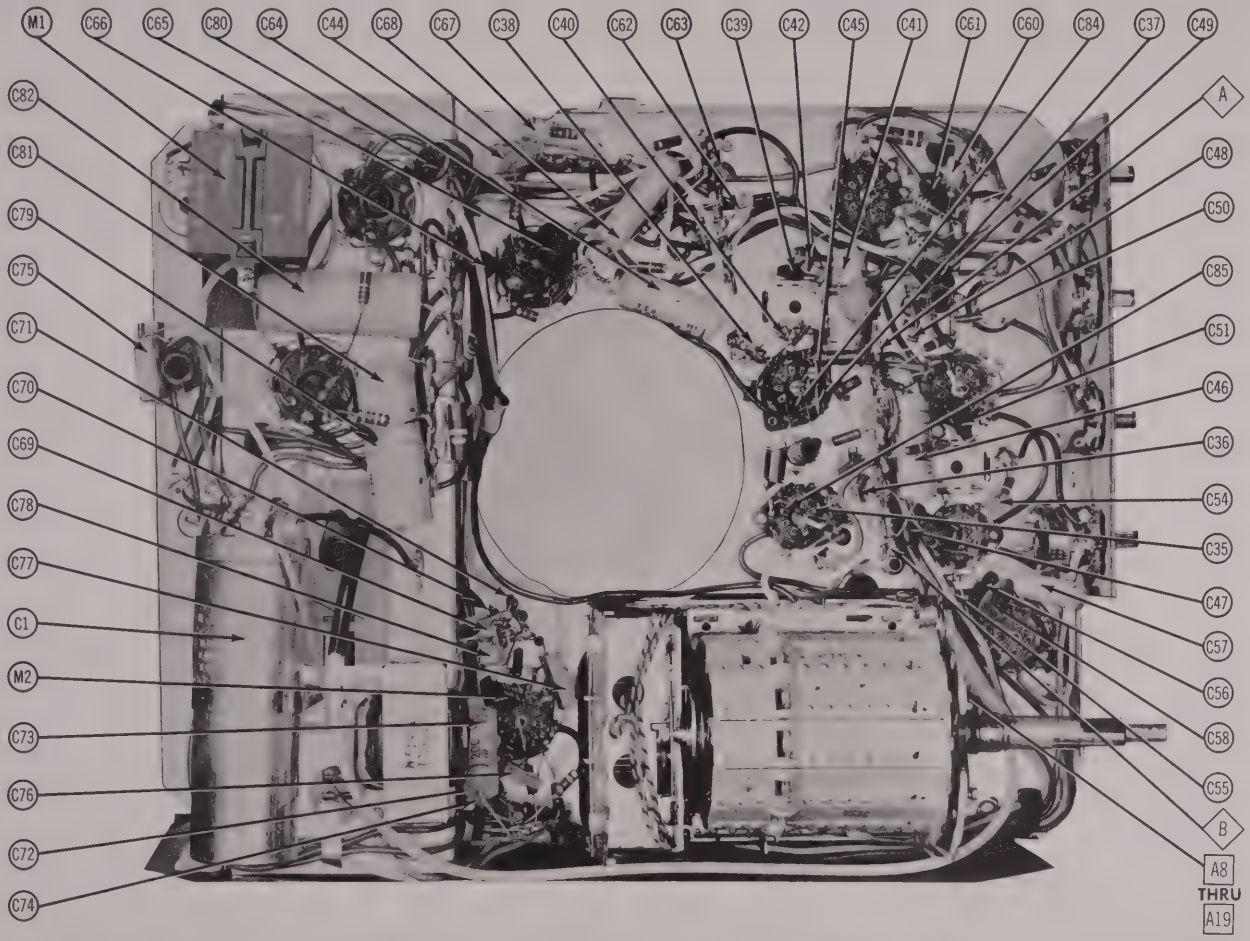
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5
No pic, no sound, has snow - V2, V3, V1 (UHF only)
No pic, has sound, has raster - V6, V15
Has pic, no sound - V7, V8, V9

SYNC FAILURE
No vert. sync - V6
No horiz. sync - V6, Diode (M2)
No vert. or horiz. sync - V6

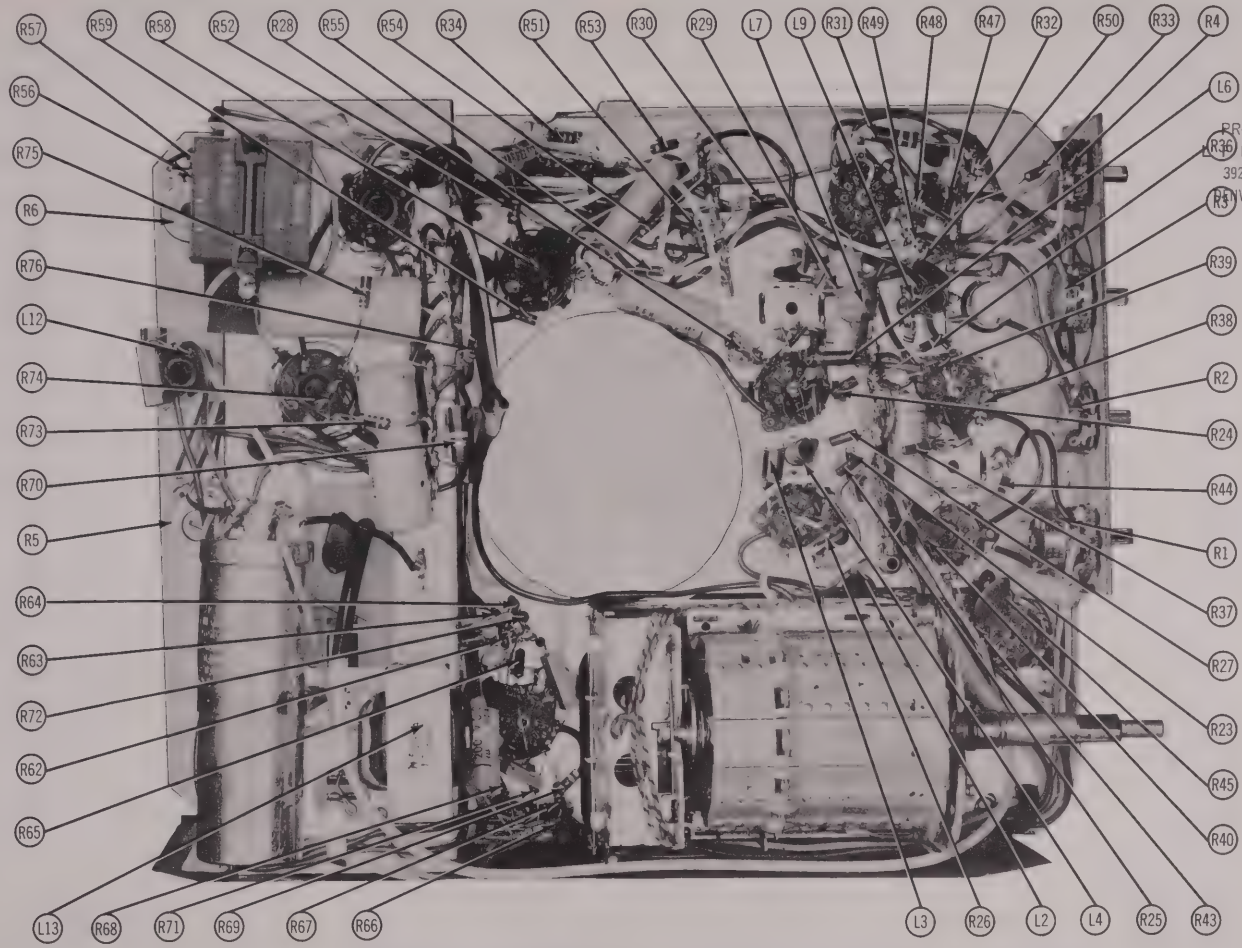
SWEEP FAILURE
No raster, has sound - M2, V11, V12, V13, V14, V15
No vertical deflection - V7, V10
Poor vert. linearity or foldover - V7, V10
Poor horiz. linearity or foldover - V11, V12, V13
Narrow picture - V11, V12, V13, M1
Vert. off freq. - V7, V10
Horiz. off freq. - V11

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT
Allow a 20 minute warm-up period for the receiver and test equipment.

SOUND IF ALIGNMENT

Set the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to point (A). Low side to chassis.	4.5MC (unmod.)	Any non-interfering channel.	DC probe thru 10K to pin 2 (cathode) of 3DT6 (V8). Common to chassis. Use 10 volt scale.	A2, A3	Detune A1 by turning slug fully counter clockwise. Adjust A2 for maximum deflection. Attenuate generator output to maintain meter reading between 3.5 and 5 volts during this adjustment. Adjust A3 for maximum deflection. Attenuate generator output to keep reading between 3.5 and 5 volts during this adjustment.
2.	"	High side to point (A). Low side to chassis. Use maximum signal output.	"	"	DC probe thru 10K to pin 5 (plate) of 3DT6 (V8). Common to chassis. Use 150 volt scale.	A1	Adjust A1 clockwise for MINIMUM deflection. Continue turning slug clockwise until a reading of 125 volts (±3 volts) is obtained.

Remove the input signal and retouch A3 for maximum deflection on VTVM.

VIDEO IF ALIGNMENT

Disable the high voltage by connecting the negative lead of a 60 volt bias supply to pin 5 (Grid) of the 12DQ6 (V12). Positive lead to chassis.
Turn the contrast control fully counter clockwise.
Connect the negative lead of a 3 volt bias supply to point (B). Positive to chassis.
Preset A5 fully clockwise (from bottom).
Preset A6 and A7 fully counter clockwise (from top).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide usable indication on VTVM.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	.005MFD	High side to point (C). Low side to chassis.	Not Used	44.75MC (unmod.)	Set tuner between channels.	Use VTVM. DC probe thru 10K to point (A). Common to chassis. Connect a 1000MMF capacitor across VTVM terminals.	A4, A5 A6, A7	Adjust for maximum deflection.
4.	"	"	43.5MC (10MC Swp)	45.75MC	"	Vert. amp. thru 10K to point (A). Low side to chassis. Connect a 1000MMF capacitor across scope terminals.		Readjust A4 to place 45.75MC at 50% on curve as in Fig. 1.
5.	"	"	"	43.55MC	"	"		Readjust A7 to place 43.55MC at 50% on curve as in Fig. 1.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide usable pattern on scope.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point (A). Low side to chassis.	A8	Adjust to place sound marker in trap notch as in Fig. 2. Video marker should fall at 50%.
		207MC (10MC Swp)	205.25MC 209.75MC	12		A9	
		201MC (10MC Swp)	199.25MC 203.75MC	11		A10	
		195MC (10MC Swp)	193.25MC 197.75MC	10		A11	
		189MC (10MC Swp)	187.25MC 191.75MC	9		A12	
		183MC (10MC Swp)	181.25MC 185.75MC	8		A13	
		177MC (10MC Swp)	175.25MC 179.75MC	7		A14	
		85MC (10MC Swp)	83.25MC 87.75MC	6		A15	
		79MC (10MC Swp)	77.25MC 81.75MC	5		A16	
		69MC (10MC Swp)	67.25MC 71.75MC	4		A17	
		63MC (10MC Swp)	61.25MC 65.75MC	3		A18	
		57MC (10MC Swp)	55.25MC 59.75MC	2		A19	

UHF TUNER AND VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

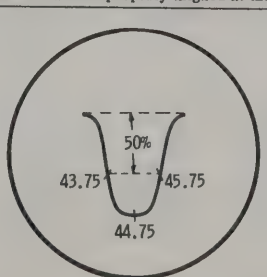


FIG. 1

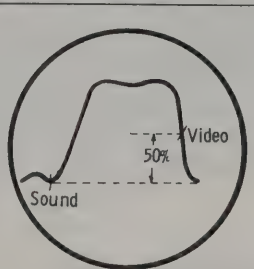


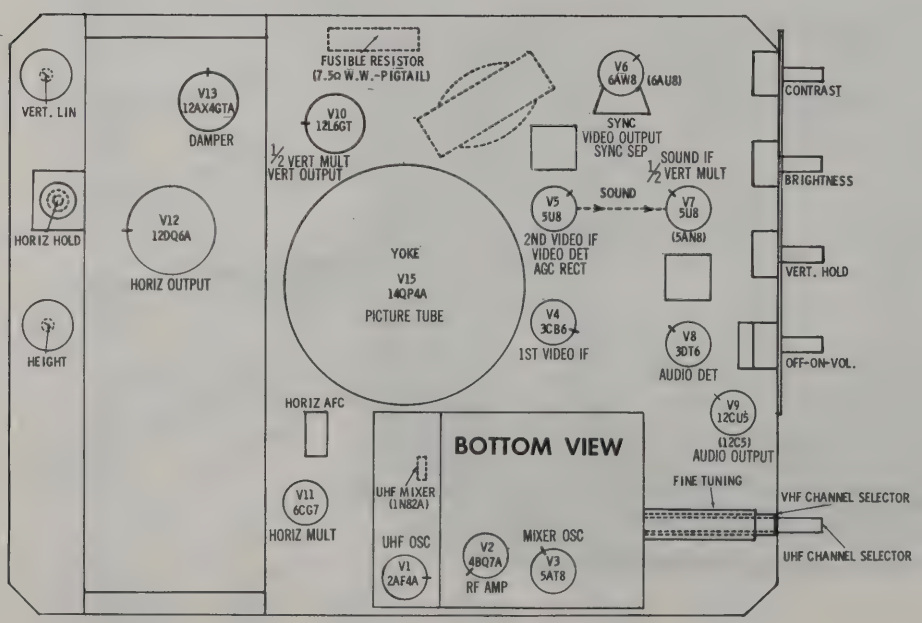
FIG. 2

CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	2AF4A	† *3300Ω	10K	3.5Ω	3Ω	.1Ω	10K	† *3300Ω		
V2	4BQ7A	† 950Ω	3.3Meg	0Ω	1.5Ω	3Ω	† 700Ω	3.2Meg	.1Ω	0Ω
V3	5AT8	10K	† 3300Ω	0Ω	0Ω	1.5Ω	† 8900Ω	† 19K	0Ω	220K
V4	3CB6	3.2Meg	56Ω	16Ω	15Ω	† 175Ω	† 175Ω	0Ω		
V5	5U8	1Meg	.1Ω	† 175Ω	15Ω	13.5Ω	† 175Ω	180Ω	220Ω	7000Ω
V6	6AW8	0Ω	1.8Meg	† 25K	13.5Ω	12Ω	• 300Ω	1Meg	† 24Ω	† 4700Ω
V7	5U8	•‡ 2.2Meg	100K	† 15K	24Ω	23Ω	† 1000Ω	† 0Ω	0Ω	• 1.2Meg
V8	3DT6	4.8Ω	1000Ω	23Ω	22Ω	‡850K	† 4700Ω	560K		
V9	12CU5	180Ω	0Ω	16Ω	22Ω	0Ω	† 24Ω	† 250Ω		
V10	12L6GT	TP	9Ω	† 275Ω	† 24Ω	• 2Meg	TP	11Ω	0Ω	
V11	6CG7	† 82K	150K	750Ω	11Ω	12Ω	† 10K	1.6Meg	750Ω	0Ω
V12	12DQ6A	NC	5Ω	NC	† 200Ω	470K	TP	3.5Ω	0Ω	TOP CAP ‡11Ω
V13	12AX4GT	NC	NC	¶	NC	† 24Ω	NC	5Ω	7.5Ω	
V14	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡46IΩ
V15	14QP4A	9Ω	22K	PIN 6 22K	PIN 10 ‡27K	PIN 11 • 480K	PIN 12 7.5Ω			

* MEASURED IN "UHF" POSITION.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V13.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
TP TIE POINT
NC NO CONNECTION



TUBE PLACEMENT CHART

HOFFMAN MODELS BT1144, U, BW1144, U, GT1144, U, PT1144, U, SG1144, U (Ch. 326, U)

ALTERNATE TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	UHF Osc.	2AF4A	
V2	RF Amplifier	4BQ7A	
V3	Mixer-Osc.	5AT8	
V4	1st. Video IF Amp.	3CB6	
V5	2nd. Video IF Amp. - Video Det. -AGC Rectifier	5U8	
V6	Video Output-Sync Sep.	6AL8	Note 1
V7	Sound IF Amp. -Vert Mult.	5U8	Note 2
V8	Audio Det.	3DT6	
V9	Audio Output	1BC8	Note 3
V10	Vert Mult.-Vert Output	1BL8GT	
V11	Horiz. Mult.	6CG7	
V12	Horiz. Output	12DQ6A	
V13	Damper	1A3GT	
V14	HV Rectifier	1X2B	

Note 1. Some versions may use a 6AU8 in this application.
Note 2. Some versions may use a 5AN8 in this application.
Note 3. Some versions may use a 12C8 in this application.

PICTURE TUBE

ITEM No	REPLACEMENT DATA			NOTES
	HOFFMAN PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	
V15	14421MA	14421MA ① 14421 ②	① Aluminized ② Silver Screen "82"	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP.	VOLT	HOFFMAN PART No.	ALLOYOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲ 200	150	4363A	PK3-013	XCC138	WT320	CDB-T-1015	▲ 0-005 *MT-1510	R2375 *
B	▲ 250	150							
C	4.10	150							

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HOFFMAN PART No.	ALLOYOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	5			NPO-SI 5	TCZ-4R7	C10Y5C	TCO-5	ZT-555	BTCCB-V5	
C3	5			NPO-SI 5	TCZ-4R7	C10Y5C	TCO-5	ZT-555	BTCCB-V5	
C4	15			NPO-SI 15	TCZ-15	C10Q15C	TCO-15		BTCC-Q15	5% N220
C5	3.6									
C6	200									
C7	1000			EF-001	MFT-1000				503C-DI	
C8	1000			EF-001	MFT-1000				503C-DI	
C9	1000			EF-001	MFT-1000				503C-DI	
C10	120			BPD-00012	DD-121	L10T12	ED-120	UC-5312	SGA-T12	
C11	5			NPO-SI 5	TCZ-4R7	C10Y5C	TCO-5	ZT-555	BTCCB-V5	
C12	5.6			NPO-SI 5.6	TCZ-5R6	C10Y5BC	TCO-5.6	ZT-5565	BTCCB-V56	NPO
C13	5.6			NPO-SI 5.6	TCZ-5R6	C10Y5BC	TCO-5.6	ZT-5565	BTCCB-V56	NPO
C14	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC5315	BSK-D15	
C15	1000			EF-001	DD-102	BYA10D1	ED-1000	DC531	BSK-D1	
C16	3.3			NPO-SI 3.3	TCZ-3R3	C10Y3ZC	TCO-3.3		BTCCB-V33	NPO
C17	3-12									
C18	1000			BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1	
C19	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC5315	BSK-D15	
C20	1000			EF-001	MFT-1000				503C-DI	
C21	3-3				EFB-3	3115E	CY505A		BTC-M3	
C22	1000			EF-001	MFT-100				503C-DI	
C23	3-5									
C24	1.0			NPO-SI 1.0	TCZ-1.0				BTCCB-V1	Note 1
C25	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC5315	BSK-D15	
C26	5			NPO-SI 5	TCZ-4R7	C10Y5C	TCO-5	ZT-555	BTCCB-V5	NPO
C27	10			NPO-SI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	BTCC-Q8	NPO
C28	120									N750 Note 2
C29	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	SGA-T47	
C30	1000			EF-001	MFT-1000				503C-DI	
C31	1000			EF-001	MFT-1000				503C-DI	
C32	1000			EF-001	MFT-1000				503C-DI	
C33	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC-5315	BSK-D15	
C34	1500			BPD-0015	DD-152	BYA10D15	ED-0015	DC-5315	BSK-D15	
C35	470		14050		DD-471	L10T47	ED-470			10%
C36	1000		14045	BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1	
C37	470		14050		DD-471	L10T47	ED-470			10%
C38	1000		14045	BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1	
C39	1000		14045	BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1	
C40	10		4059	BPD-10	D6-100	L10Q10	ED-10		SGA-Q10	
C41	.1	300	4143		PX88M-1	DF-104	CUB34M	GEM-401	BTM-P1	
C42	470		14050			DD-471	L10T47	ED-470		10%
C43	.1	400	4150		P488M-1	DF-104	CUB49L		GEM-401	MTM-P1
C44	.047	300	4147		BPD-05	DF-503	CUB2347		GEM-3147	STM-S47
C45	4.7		4063		NPO-SI 4.7	TCZ-4R7	TCO-4.7	TCO-4.7	ZT-555	BTCCB-V47 10%
C46	.1	400	4150		P488M-1	DF-104	CUB49L		GEM-401	MTM-P1
C47	1000		14045		BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1
C48	10				SI 10	D6-100	L10Q1	GP-10	UC-541	SGA-Q1 Note 3
C49	47		4057		NPO-SI 47	TCZ-47	C10Q47C	TCO-47		BTCC-Q47 10%
C50	47		14057		BPD-000047	D6-470	L10Q47	ED-47		SGA-Q47
C51A	4000		4026		BPD-X1004	D6-402	BTCED2D8	EDS-004	DCD594	SHK-2D4
B	4000					D6-402		EDS-004		SHK-2D4
C52	18		14419			TCZ-18	C10Q18C	TCO-18		
C53	.047	300	4147		BPD-05	DF-503	CUB2347		GEM-3147	STM-S47
C54	1000		14045		BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1
C55	4700		4053		BPD-047	DD-472	BYA10D47	ED-4700	DC-5347	BSK-D47
C56	1000		4060		BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1
C57	.01	400	4143		BPD-01	DF-104	CUB49L	GP-10000	GEM-411	MTM-S1
C58	10000		4067		BPD-01	DD-103	BYA5DL	ED-01	DC531	BSK-S1
C59	4700		4055		BPD-047	DD-472	BYA10D47	ED-0047	UC-5347	SHK-D47
C60	.0032	600	4145		BPD-0032	D6-323	CUB2G32	GP-3200	GEM-4322	STM-D22
C61	270		4023			D6-271	L10T27	ED-270		10%
C62	820		14413			D6-821		ED-820		10%
C63	2200		14023		BPD-0022	D6-222	BYA10D22	ED-0023	UC-5223	SGA-D22
C64	.1	400	4150		P488M-1	DF-104	CUB49L		GEM-401	MTM-P1 Note 4
C65	10000		4067		BPD-01	DD-103	BYA5DL	ED-01	DC531	BSK-S1
C66	1000		4060		BPD-001	DD-102	BYA5DL	ED-1000	DC521	BSK-D1
C67	.0039	400	4184			D6-392				Note 5
C68	.047	400	4132							10%
C69	15				SI 15	D6-150	L15Q15	GP-15	UC-5415	SGA-Q15 Note 5
C70	24				SI 24	TCZ-24	L10Q24	ED-24		Note 6
C71	1000		14045		BPD-001	DD-102	BYA5DL	ED-1000	DC521	SHK-D1
C72	.001	600	4148							10%
C73	.1	200	4143		P88M-1	DF-104	CUB49L		GEM-401	MTM-P1
C74	100		14077			1489-0001	DF-101	2285T1	GP-100	MS-31 10%
C75	3900		4037			1484-0039		1R5D39		MS-239 10%
C76	330		4030			1484-00033	D6-331	5S5T33	GP-330	MS-333 10%
C77	680		4043			1484-00068	D6-681	1R5T68	GP-680	MS-368 10%

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	HOFFMAN PART No.	ALLOYOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No	SPRAGUE PART No.	
C78	.0047	600	4185							10%
C79	820		14413							10%
C80	68	3000			HVD-30-68	DD30-680	HVA39G68	MDS-68	DC30468	SGGA-Q47 Note 7
C81	.22	600	4139		P68M-22		CUB49P22		GEM-6022	STM-P22
C82	.33	600	4139		P68M-32		CUB49P33		GEM-6022	S1M-P22
C83	47	3000	14048							10%
C84	1000		14045		BPD-001	DD-102	BYA5DI	ED-1000	DC521	SHK-D1
C85	1000		14045		BPD-001	DD-102	BYA5DI	ED-1000	DC521	SHK-D1

Note 1. Some versions may use a 1MMF in this application.
Note 2. Some versions may use a 68MMF in this application.
Note 3. Prior to serial #A82165 this cap is a 3MMF 500V 10% (Part #4050).
Note 4. Some versions use an .047MFD @ 400V 10% (Part # 4132) in this application.
Note 5. Some versions use a 68MMF 500V 10% (Part #4068) in this application.
Note 6. Some versions use a 47MMF 500V 10% (Part #4057) in this application.
Note 7. Some versions may use a 27MMFD@ 3000V 10% Disc. to the application (Part #4643).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HOFFMAN PART No	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	250K	½	4180A	B-60	A47-500K-Z	QJ1-123	TA334A	Volume
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
C	Switch			KB-1	SWB-12	TS-1	UB-56	
R2A	1.5Meg	½	4181A	B-743	A47-1.5Meg-Z	QJ1-158	TA153L	Vert. Hold
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R3A	150K	½	4961A	B-48	A47-150K-S	QJ1-128	TA154L	Brightness - Note 1
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R4A	500Ω	½	4183A	B-4	A47-500-S	QJ1-103	TA32L	Contrast
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R5A	2Meg	½	4184A	AB-75	A47-2Meg-S	QJ1-169	PTA28L	Height
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R6A	2Meg	½	4184A	AB-75	A47-2Meg-S	QJ1-169	PTA28L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	

Note 1. An alternate 2Meg control (Part #4812A) may be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HOFFMAN Part No.	IRC Part No.	
R7	680K			BTS-680K	
R8	680K			BTS-680K	
R9	10K			BTS-10K	
R10	680K			BTS-680K	
R11	4700Ω			BTS-4700	
R12	100K			BTS-100K	
R13	10K			BTS-10K	
R14	270Ω			BTS-270	
R15	560Ω			BTS-560	
R16	8200Ω			BTS-8200	Note 1
R17	220K			BTS-220K	
R18	10K			BTS-10K	Note 3
R19	8200Ω			BTS-8200	Note 3
R20	3300Ω	1		BTA-3300	
R21	100K			BTS-100K	
R22	10K			BTS-10K	
R23	2.2Meg		4606		
R24	1Meg		4614	BTS-1Meg	
R25	150Ω		4615	BTS-150	
R26	56Ω		4581	BTS-56	
R27	150Ω		4615		
R28	180Ω		14618	BTS-180	
R29	5800Ω		4557	BTS-5800	
R30	1Meg		4614	BTS-1Meg	
R31	4700Ω	1		BTA-4700	Note 4
R32	15K		4619	BTS-15K	
R33	220		4563	BTS-220	
R34	22K		4639	BTS-22K	
R35	470K		4622	BTS-470K	
R36	100K		4671	BTS-100K	
R37	1000Ω		4659	BTS-1000	Note 5
R38	22K		4636	BTS-22K	
R39	12K		4646	BTS-12K	
R40	820K		4676	BTS-820K	
R41	100K		4671	BTS-100K	
R42	560K		4590	BTS-560K	
R43	47000		4678	BTS-47000	
R44	1000Ω		4659	BTS-1000	
R45	180Ω		14618	BTS-180	
R46	1Meg		4614	BTS-1Meg	
R47	1.5Meg		4605	BTS-1.5Meg	
R48	330K		34531	BTS-330K	
R49	39K		34638	BTS-39K	
R50	82K			BTS-82K	Note 6
R51	68K		4600	BTS-68K	
R52	47K		4559	BTS-47K	
R53	2.2Meg		34630	BTS-2.2Meg	Note 7
R54	82K			BTS-82K	Note 8
R55	1.5Meg		4605	BTS-1.5Meg	
R56	330K		34531	BTS-330K	
R57	330K		34531	BTS-330K	
R58	39K		34638	BTS-39K	
R59	47K		4559	BTS-47K	
R60	680Ω		14677		
R61	680Ω		14677		
R62	1Meg		4614		
R63	330K		34670	BTS-330K	
R64	47000		4567		
R65	1Meg		4614		
R66	82K		34670	BTS-82K	
R67	150K		4589	BTS-150K	
R68	10K		4597		
R69	82K		34670	BTA-320K	
R70	320K	1		BTS-750 5%	
R71	750Ω 5%		14685	BTS-750 5%	
R72	4700Ω		4576	BTS-4700	
R73	470K		4623	BTS-470K	
R74	100Ω		4585	BTS-100	
R75	180Ω		14618	BTS-180	
R76	27K		24616	BTS-27K	
R77	4700Ω		4576	BTS-4700	
R78	7.5Ω		4782	PRT-5	
R79	33Ω	20	4738A		

Note 1. Some versions may use a 47000 in this application.
Note 2. Some versions may use a 100K in this application.
Note 3. Some versions may use a 10000 (Part #4659) in this application.
Note 4. Some versions may use a 3300Ω, 3W in this application.
Note 5. Some versions may use a 15K (Part #4619) in this application.
Note 6. Some versions may use a 33K in this application.
Note 7. Some versions may use a 3.3Meg in this application.
Note 8. Some versions may use a 100K (Part #4571) in this application.
Note 9. Some versions may use a 330K (Part #4614) in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							
		HOFFMAN PART No	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	Vert. Output	5186A-2	21900 ①	A-2832 ②	V34 ②	A-8149 ③	26871 ②	A-10GX ②	
	Alt. Vert. Output	5186A							
T2A	Yoke-Horiz.(20MH)	99838-2	DF505 ④ ⑤ ⑦	MDF-73 ④ ⑤ ⑦	223DH ④ ⑤ ⑦	Y70F30/45 ④ ⑤ ⑦	DY-41A ④ ⑤	Y-10 ④ ⑦	Y-32 & NW19 ④ ⑦
B	(70°) Vert. (45Mfd) Alt. Yoke	99826							
M5	Rear Cover and Centering Device	10029							
T3	Horiz. Output	5191A					HO-261 *	FLY-109*	

① Use 6.5 to 1 turn ratio.
② Drill new mounting hole(s).
③ Remove black lead of yoke from ground, connect blue lead to plate, green lead to yellow lead of yoke and B+, red lead to junction of green lead of yoke and capacitor (C44).
④ Remove black lead of yoke from ground, connect blue lead to plate, black lead to yellow lead of yoke and B+, red lead to junction of green lead of yoke and capacitor (C44).
⑤ Use original yoke damping network, if necessary.
⑥ Connect same as original.
⑦ Connect horizontal damping capacitor across terminals #3 and #7.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5					5	5	
3					3	3	
2					2	2	
1					1	1	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	2500Ω	3-4Ω	5184-A	22101	A-3025	A-3332	26858 ①	S-13X	① Drill one new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HOFFMAN PART No.	QUAM PART No	
SP1	4"	PM	3-4Ω	8137-1	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	1st Video IF	5383A	17-4534		6325	
L2	RF Choke	5373A			6636	27 Microhenries
L3	Fil. Choke	5133-1	19-1001	RC-583	6504	1, 5 Microhenries
L4	2nd Video IF		17-4534	TV-130	6319	
L5	3rd Video IF	5254A	17-5004	TV-128	6234	
L6	RF Choke	5268A	19-1005	RC-586	6618	10 Microhenries
L7	Shunt Peaking Coil	5307A			8156	820 Microhenries
L8	Series Peaking Coil	5480	19-3250	TV-186	8181	250 Microhenries
L9	1st Sound IF	5376A	20-1004	TV-151	1469	
L10	2nd Sound IF	5370A	17-3495	TV-113	6303	
L11	Quadrature Coil	5380A	20-1007	TV-121	1460	

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L12	52Ω		5385A		TV-185				HB-7 ①	19.4 - 98 Millihenries

① Fabricate mounting and disregard tap.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 (%)	HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L13	.200A	24Ω	.5HY	5190-A	C-9041 ①	C-2974 ①	C-2328 ①	26C44 ①	C-27X

① Drill one new mtg hole

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT (Measured)	HOFFMAN PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.250	10009 ①	1023A ③	1N1007 ③	R8350S1 ③	68850 ①	350 ①	
M2		10031 ①	1215 ③		1T1 ③			

① Selenium Type ② Germanium Type ③ 2 Required

CRYSTAL DIODES

ITEM No.	CRYS. TYPE	REPLACEMENT DATA			NOTES
		HOFFMAN PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N82A		1N82A	1N82A	UHF Mixer (Clip in)

MISCELLANEOUS

ITEM No	PART NAME	HOFFMAN PART No.	NOTES
M4	Tuner	9932	UHF-VHF - All UHF-VHF versions
	Tuner	9926	VHF - All VHF versions
M5	Centering Device	10029	Includes Yoke Rear Cover
M6	Ion Trap	5715	

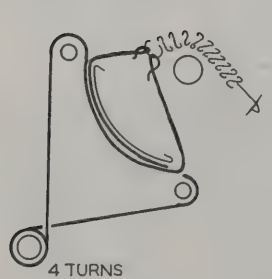
HOFFMAN MODELS BT1144 U, BW1144 U, GT1144 U, PT1144, U, SG1144, U, 326, U

PARTS LIST AND DESCRIPTIONS (Continued)

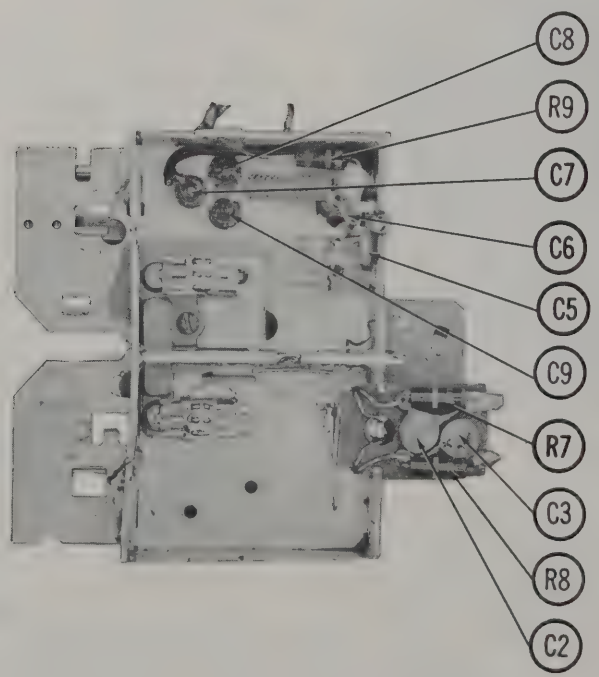
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

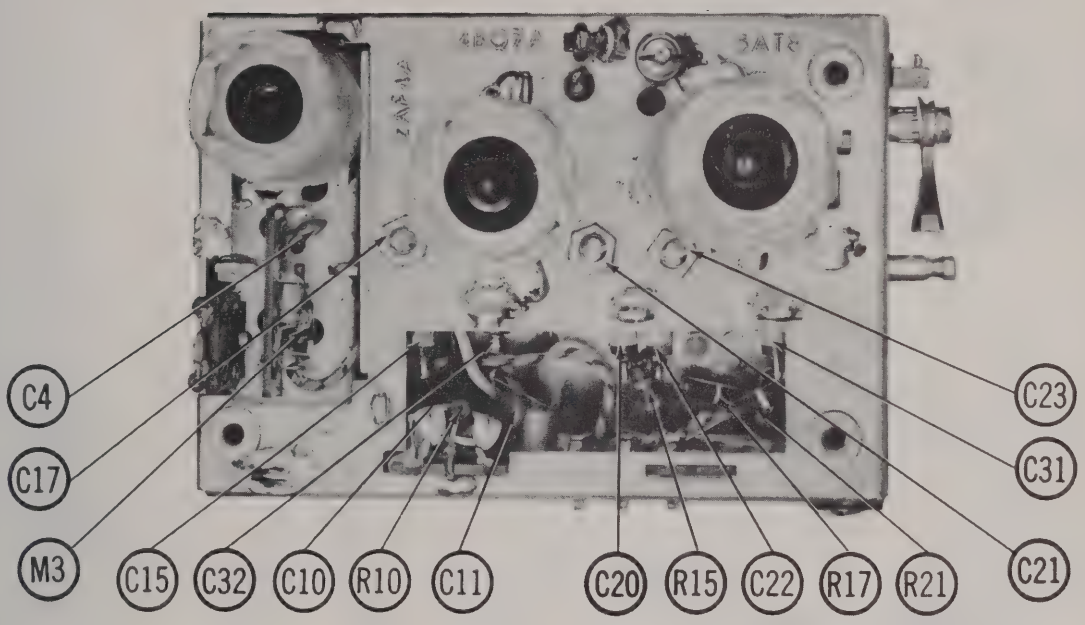
NAME	PART NO.	DESCRIPTION
Safety Glass	33005	
Mask	P2275A	Model PT1144, U
Mask	GR2275A	Model SG1144, U
Mask	B2275A	Model BW1144, U
Mask	GL2275A	Model GT1144, U
Mask	BR2275A	Model BT1144, U
Knob	T33834	UHF Channel Selector-Model PT1144U
Knob	GR33834	UHF Channel Selector-Model SG1144U
Knob	W33834	UHF Channel Selector-Model BW1144U
Knob	TL33834	UHF Channel Selector-Models GT1144U, BT1144U
Knob	T33835	VHF Channel Selector-Model PT1144U
Knob	GR33835	VHF Channel Selector-Model SG1144U
Knob	W33835	VHF Channel Selector-Model BW1144U
Knob	TL33835	VHF Channel Selector-Models GT1144U, BT1144U
Knob	T33783	Fine Tuning-Model PT1144U
Knob	GR33783	Fine Tuning-Model SG1144U
Knob	W33783	Fine Tuning-Model BW1144U
Knob	TL33783	Fine Tuning-Models GT1144U, BT1144U
Knob	T33029	VHF Channel Selector-Model PT1144
Knob	GR33029	VHF Channel Selector-Model SG1144
Knob	W33029	VHF Channel Selector-Model BW1144
Knob	TL33029	VHF Channel Selector-Models GT1144, BT1144
Knob	T33030	Fine Tuning-Model PT1144
Knob	GR33030	Fine Tuning-Model SG1144
Knob	W33030	Fine Tuning-Model BW1144
Knob	TL33030	Fine Tuning-Models GT1144, BT1144
Knob	T33025	On-Off-Volume-Model PT1144, U
Knob	GR33025	On-Off-Volume-Model SG1144, U
Knob	W33025	On-Off-Volume-Model BW1144, U
Knob	TL33025	On-Off-Volume-Models GT1144, U, BT1144, U
Knob	T33027	Brightness-Model PT1144, U
Knob	GR33027	Brightness-Model SG1144, U
Knob	W33027	Brightness-Model BW1144, U
Knob	TL33027	Brightness-Models GT1144, U, BT1144, U
Knob	T33028	Contrast-Model PT1144, U
Knob	GR33028	Contrast-Model SG1144, U
Knob	W33028	Contrast-Model BW1144, U
Knob	TL33028	Contrast-Model GT1144, U, BT1144, U
Knob	T33026	Vert Hold-Model PT1144, U
Knob	GR33026	Vert Hold-Model SG1144, U
Knob	W33026	Vert Hold-Model BW1144, U
Knob	TL33026	Vert Hold-Models GT1144, U, BT1144, U
Cabinet	T7810	Tan-Model PT1144, U
Cabinet	S7810	Grey-Model SG1144, U
Cabinet	W7810	White-Model BW1144, U
Cabinet	TL7810	Light Tan-Models GT1144, U, BT1144, U



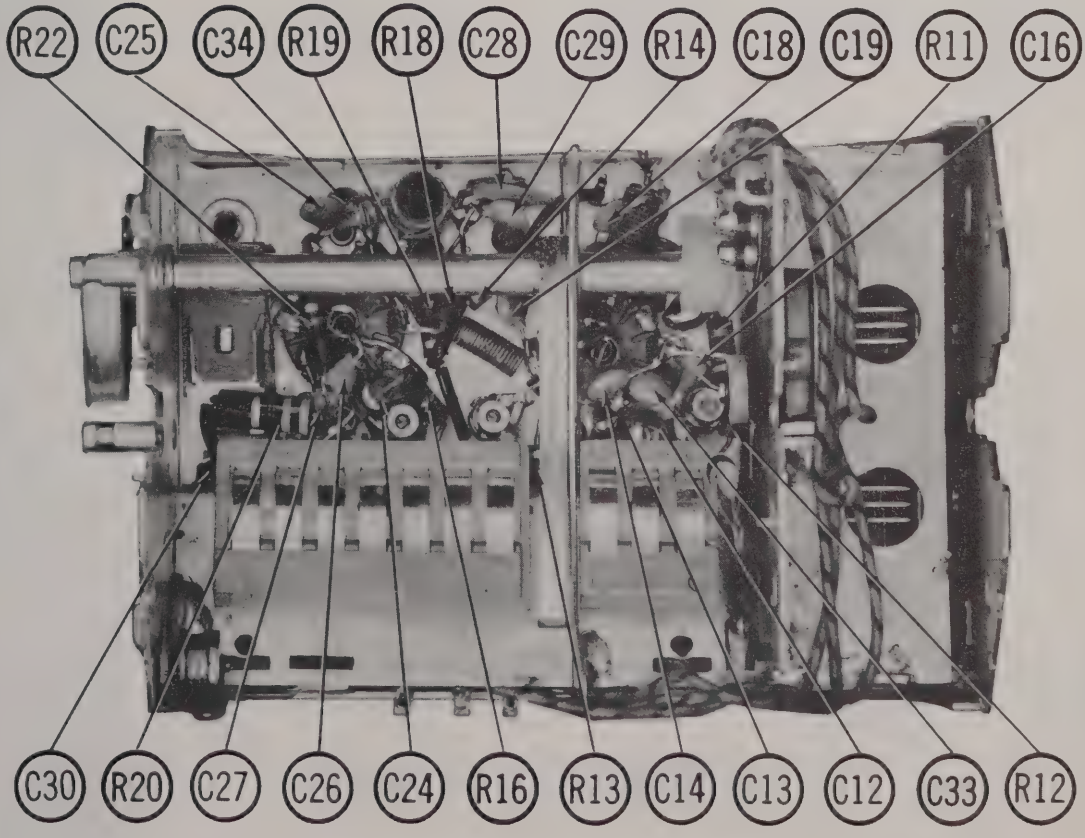
UHF DRIVE CORD



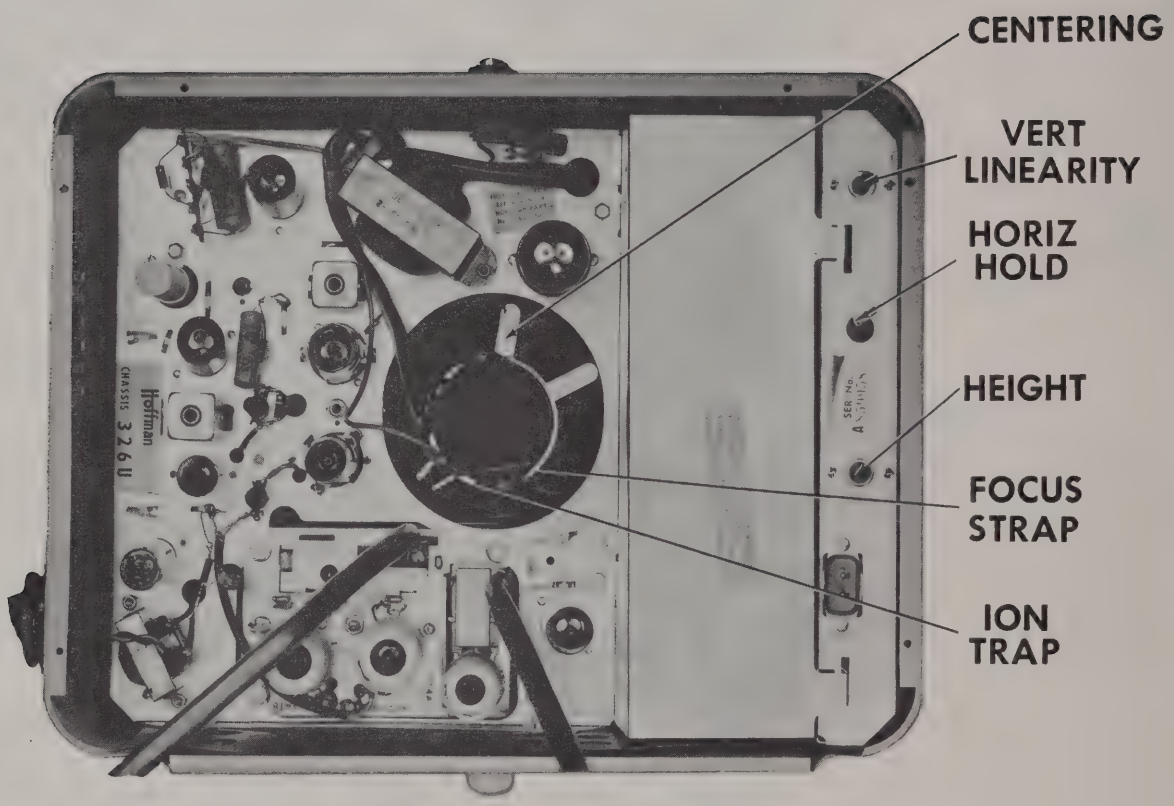
UHF TUNER SIDE VIEW



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.

2. Set the brightness and contrast controls for a normal picture.

3. Turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

4. Turn the horizontal hold slowly counter clockwise until the picture just falls into sync.

PHOTOFACT* Folder

RETMA MEMBER

MOTOROLA MODELS Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

MODEL 21CT2M (Ch. TS-905)

MOTOROLA MODELS Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America

PHOTOFACT* Folder

MOTOROLA MODELS Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

MODEL 21CT2M (Ch. TS-905)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MOTOROLA MODELS Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

TRADE NAME	Motorola	MODELS	CHASSIS
		Y21CT2B, Y21CT2M	TS-905Y
		21CT2B, 21CT2M	TS-905
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Color Television Receiver		
TUBES	Thirty		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 430 Watts, 4.2 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

INDEX

Alignment Instructions 6, 7, 8
Block Diagram 3
Drive Cord Stringing (UHF) 27
Disassembly Instructions 15
Miscellaneous Adjustments 14, 15
Parts List and Descriptions ..... 23 thru 27
Photographs
- Cabinet-Rear View 33
- Capacitor Identification 20, 21, 28, 29
- Chassis-Top View 4, 9
- Convergence Chassis 15, 31
- Power Chassis 31
- RF Tuner 32
- Resistor Identification 12, 13, 16, 17
- Trans., Inductor & Alignment Identification 11, 18

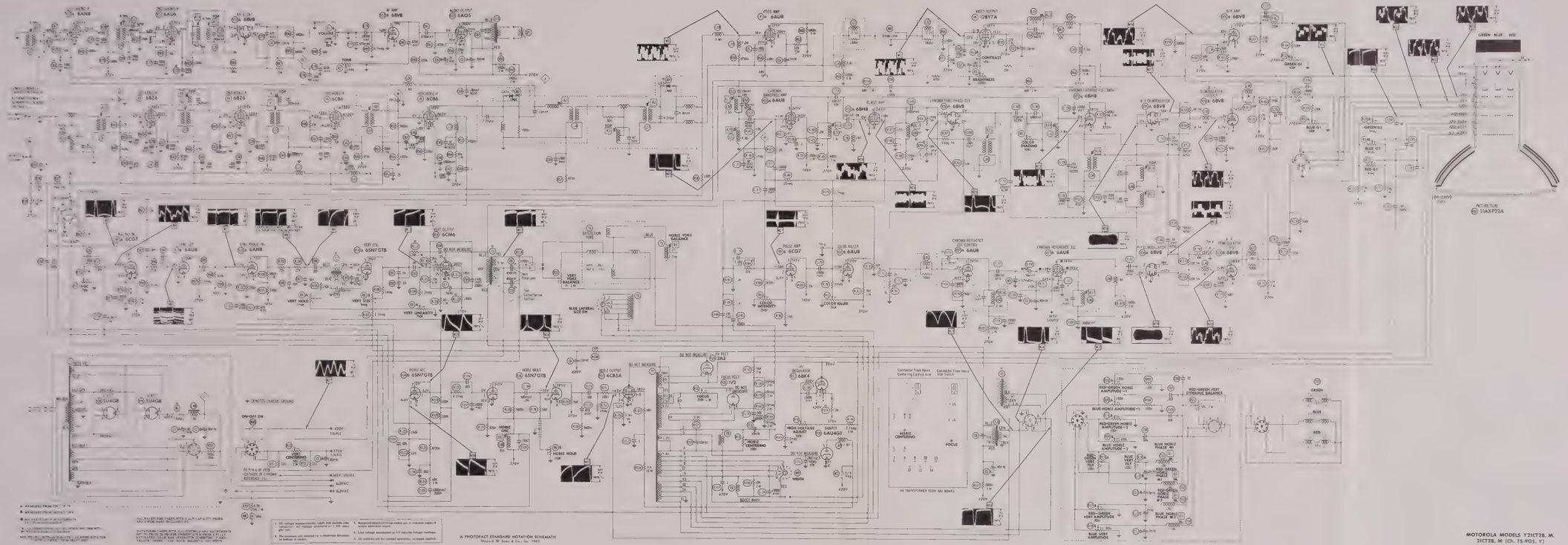
Resistance Measurements 22
Schematic (Alternate Tuner) 5
Schematic (Tuner) 10
Schematic (TV) 2
Tube Placement Chart (Bottom View) 30
Tube Placement Chart (Top View) 19

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

G954

DATE 9-57 SET 371 FOLDER 5



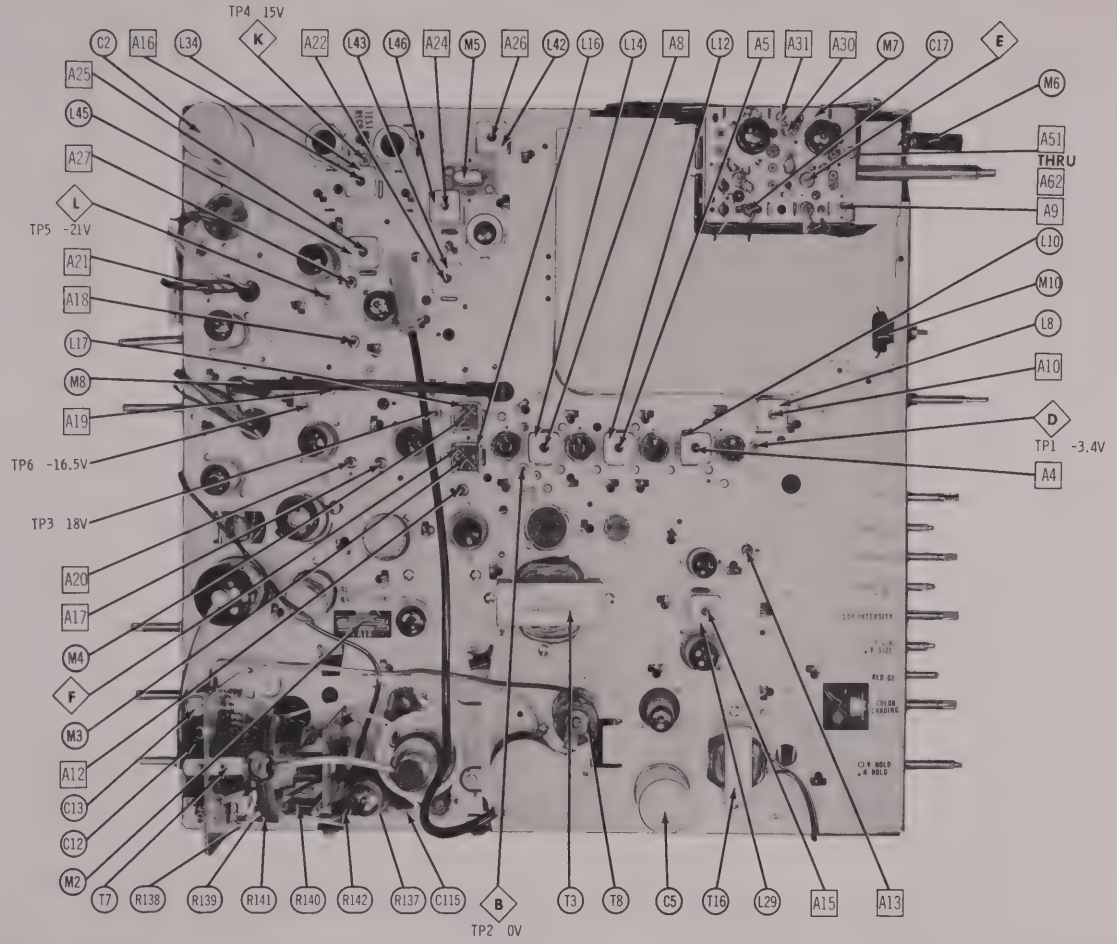
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1951

MOTOROLA MODELS T21CT2B, M,
21CT2B, M (Ch. TS-905, Y)

MOTOROLA MODELS Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

BLOCK DIAGRAM

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS TOP VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MOTOROLA MODELS Y21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

ALTERNATE TUNER SCHEMATIC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS - READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Maintain line voltage at 117 volts.
Remove the horizontal output tube V17 and connect a 2000Ω, 10W resistor from point ⑭ to chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of 9 volt bias supply to point ⑭ Positive to chassis.
Disable the tuner oscillator by grounding pin 9 (grid) of tuner oscillator tube (V3) thru a hole provided in the tuner base.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1	300 MFD	High side to point ⑭ Low side to chassis	44 MC	4. 25MC	Any non-interfering channel	Vert. Amp. to point ⑭ Low side to chassis	A1, A2, A3	Adjust A1 to place 4. 25MC marker in trap notch, A2 to place 45. 75MC marker at 90% on curve and A3 to place 41. 85MC marker at knee of curve. (See Fig. 1).
2		High side to point ⑭ Low side to chassis	"	39. 75MC 41. 85MC 45. 75MC 47. 25MC	"	"	A4, A5, A6 A7, A8	Adjust A4 to place 47. 25MC in trap notch, A5 to place 39. 75MC marker in proper trap notch, A6 to place 45. 75MC at 70% on curve and A7 to place 41. 85MC marker at not less than 80% on knee of curve. (See Fig. 2) Adjust A8 for flat response (10% maximum tilt)
3		High side to point ⑭ Low side to chassis	"	4. 25MC 43. 5MC 45. 75MC	"	"	A9, A10, A11	Adjust A9 to place 45. 75MC marker at 50% on curve, A10 to place 41. 25MC marker in trap notch, A11 to place 43. 5MC marker in center of response curve and touch-up A9 if necessary to correct for excessive tilt. (See Fig. 3) If necessary, retouch any of adjustments (A1 thru A11) for proper response

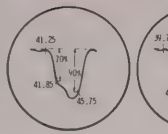


FIG 1

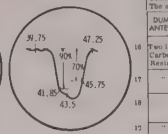


FIG 2

FIG. 3

FIG 4

SOUND IF ALIGNMENT

Connect bias as under Video IF Alignment
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4	300 MFD	High side to point ⑭ Low side to chassis	4. 5Mc. (Unmod.)	Any non-interfering channel	DC probe to pin 7 (plate) of 6BV8 (V12) Common to chassis	A12, A13, A14	Adjust for maximum deflection
5					DC probe to point ⑭ Common to chassis	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting

CHROMA BANDPASS ALIGNMENT

Connect the negative lead of a 9 volt bias supply to point ⑭ Positive to chassis
Remove the chroma reference oscillator crystal (M5) and connect a short across the crystal socket terminals.
Remove the video detector crystal (M4).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6	300 MFD	High side to pin 2 grid of 6BH8 V23 Low side to chassis	5 MC	3. 58MC	Any non-interfering channel	Vert. Amp to point ⑭ Low side to chassis	A16	Adjust for maximum amplitude at 3. 58MC as in Fig. 4
7	Fig. 5	Construct isolating transformer and connect as shown in Fig. 5	"	2. 8MC 4. 1MC 4. 5MC	"	"	A17, A18, A19, A20	Adjust A17 to place 4. 5MC in trap notch, A18 to place 2. 8MC at knee of curve, A19 for MINIMUM tilt at high end of curve and A20 for flat response. (See Fig. 6).
8		"	"	3. 58MC	"	Vert. Amp. thru detector (Fig. 7) to pin 4, 5 or 13 (cathodes) of picture tube Low side to chassis	A21	Turn contrast control fully counter clockwise and adjust A21 for MINIMUM amplitude at 3. 58MC (See Fig. 8).

CHROMA AFC ALIGNMENT

Allow a 30 minute warm-up period for the receiver and test equipment.
Set the color intensity control fully counter clockwise and the color shading control at the center of its range.
Set the color killer control fully clockwise.
Remove the 3.58 amplifier tube (V23) from its socket.
Careful adjustment of A23 imperative since incorrect tuning can render the oscillator unstable or completely inoperative.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9	Direct	Color bar generator across antenna terminals or connect antenna and tune in color broadcast	Not used	Any non-interfering channel	DC probe to point ⑭ Common to chassis	A22	Adjust A22 for maximum deflection starting with slug near bottom of can.
10	"	"	"	"	"	A23	"
11	"	"	"	"	"	A24	Adjust for MINIMUM deflection starting with slug near top of can. Repeat step 8. Turn A23 one turn toward bottom of can
12							Repeat adjustment of A24. VTVM should read at least 15 volts at this time
13					DC probe to point ⑭ Common to chassis	A25	Adjust for maximum deflection with color shading control (R5) at center of its range Then readjust for equal readings at either extreme settings of R5.
	Set shading control (R5) at position that produces MINIMUM deflection of VTVM at point ⑭. Advance Chroma and Color Killer Controls (R4 and R11) until video is visible on picture tube Reinsert burst amplifier tube (V23) in his socket. Adjust A26 to bring color picture into sync Reduce signal input and retouch A26 for best color sync						
14	Direct	Color bar generator across antenna terminals	Not used	Any non-interfering channel	DC probe to point ⑭ Common to chassis, Vert Amp. of scope to pin 3 of picture tube Low side to chassis	A27	Adjust for maximum deflection on VTVM, then for proper bar amplitude percentages as shown in Fig. 9 on scope
15		"	"	"	USE SCOPE Vert Amp. to pin 11 of picture tube Low side to chassis		Readjust A24 for proper bar percentages as in Fig. 9.

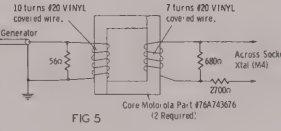


FIG 5

FIG. 6

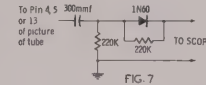


FIG. 7

FIG. 8

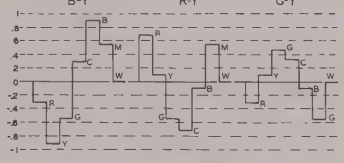


FIG. 9

FIG. 10

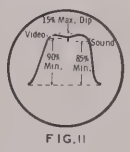


FIG. 11

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point ⑭ to chassis.
Remove the tuner cover.
Attenuate sweep generator to maintain approximately 1. 5 volt peak to peak during alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead	57 0MC (5SMC Swp)	55. 25MC 59. 75MC	3	Vert. Amp. thru 47K to point ⑭. Low side to chassis	A28	Adjust clockwise until its effect is below channel 2.
17	"	"	85. 0MC (5SMC Swp)	83. 25MC 87. 75MC	6	"	A29	Expand coil turns until its effect is above channel 6
18	"	"	"	"	"	"	A30, A31	Set to mid-range position.
19	"	"	213 0MC (5SMC Swp)	211. 25MC 215. 75MC	13	"	A32	Starting with slug half-way in coil, adjust for maximum amplitude of response similar to Fig. 10.
20	"	"	177MC (5SMC Swp)	175. 25MC 179. 75MC	7	"	A30, A31	Adjust for maximum gain and symmetry of response similar to Fig. 10 with markers as shown
21	"	"	85MC (5SMC Swp)	83. 25MC 87. 75MC	6	"	*A33, *A34, A35	Adjust coils whose "A" numbers are preceded by (*) first for proper marker positions. Adjust others for maximum gain and proper tilt (See Fig. 11)
22	"	"	"	"	"	"	A29	Adjust by expanding or compressing coil turns until the sound marker just begins to pull down.
23	"	"	79MC (5SMC Swp)	77. 25MC 81. 75MC	5	"	*A36, *A37, A38	Adjust coils whose "A" numbers are preceded by (*) first for proper marker positions. Adjust others for maximum gain and proper tilt. (See Fig. 11).
24	"	"	69MC (5SMC Swp)	67. 25MC 71. 75MC	4	"	*A39, *A40, A41	"
25	"	"	83MC (5SMC Swp)	81. 25MC 85. 75MC	3	"	*A42, *A43, A44	"
26	"	"	57MC (5SMC Swp)	55. 25MC 59. 75MC	2	"	*A45, *A46, A47	"

UHF IF ALIGNMENT

Unplug the UHF cable from the VHF tuner.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
27	Fig. 13	High side thru network (Fig. 13) to point ⑭. Low side to chassis.	44MC (30MC Swp)	42. 25MC 45. 75MC	UHF	Vert. Amp. thru 47K to point ⑭. Low side to chassis.	A48, A49, A50	Adjust A48 and A49 for proper marker positions. Adjust A50 for maximum gain and proper tilt. (See Fig. 13).

MOTOROLA MODELS V21CT2B, M, 21CT2B, M (Ch. TS-905, Y)

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

The tuner cover must be in place.
Use a non-metallic alignment tool.
Connect the negative lead of a 4.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
28.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC	13	Vert. Amp. thru 47K to point (C). Low side to chassis.	A51	Adjust to place sound marker in trap notch as in Fig. 14.
			207MC (10MC Swp)	205.25MC	12		A52	
			201MC (10MC Swp)	199.25MC	11		A53	
			195MC (10MC Swp)	193.25MC	10		A54	
			189MC (10MC Swp)	187.25MC	9		A55	
			183MC (10MC Swp)	181.25MC	8		A56	
			177MC (10MC Swp)	175.25MC	7		A57	
			85MC (10MC Swp)	83.25MC	6		A58	
			79MC (10MC Swp)	77.25MC	5		A59	
			69MC (10MC Swp)	67.25MC	4		A60	
			63MC (10MC Swp)	61.25MC	3		A61	
			57MC (10MC Swp)	55.25MC	2		A62	

44MC TRAP ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
29.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	44.0MC (10MC Swp)	44.0MC	2	Vert. Amp. thru 47K to point (C). Low side to chassis.	A28	Readjust A28 for MINIMUM amplitude at 44.0MC.

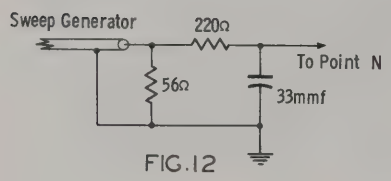


FIG. 12

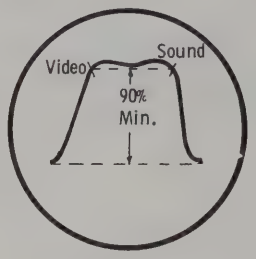


FIG. 13

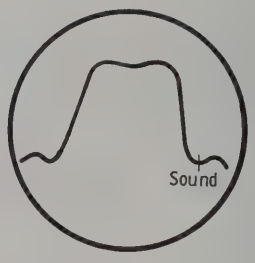


FIG. 14

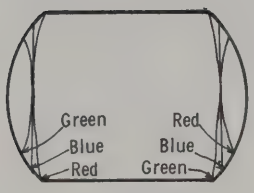


FIG. 15

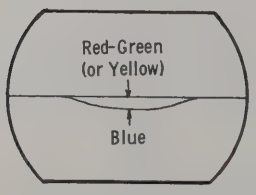


FIG. 16

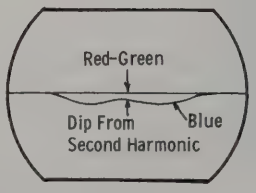


FIG. 17

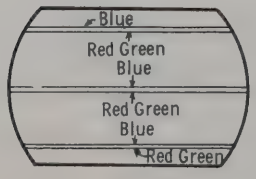


FIG. 18

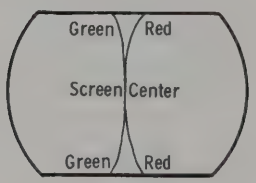
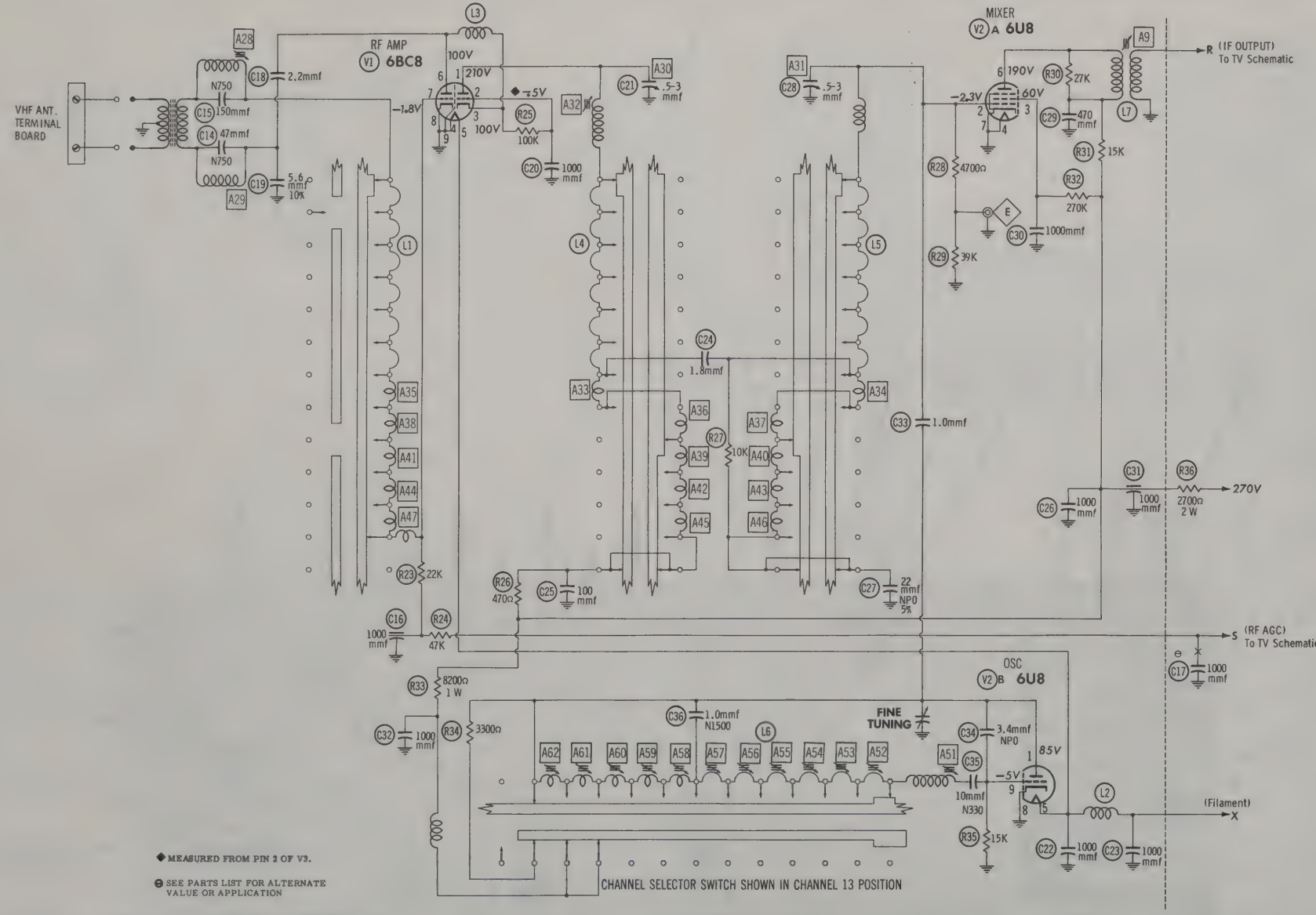


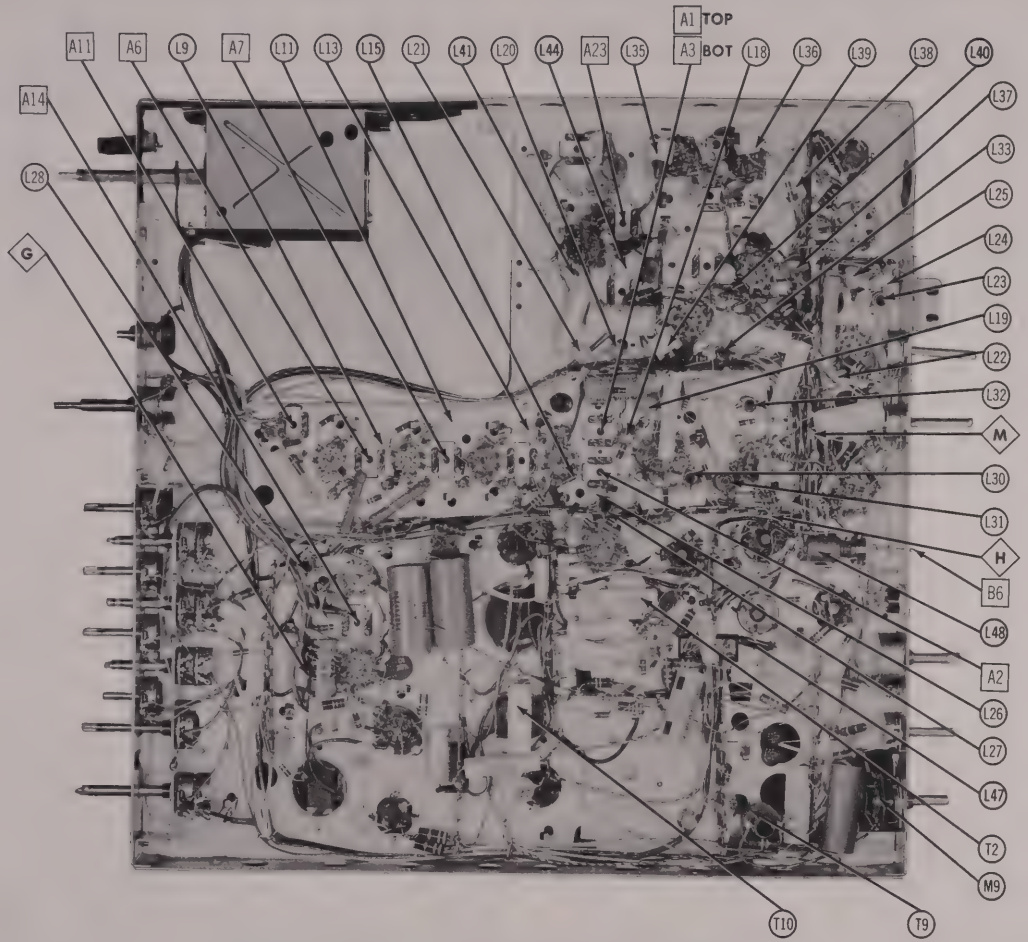
FIG. 19


VHF ANT. TERMINAL BOARD
RF AMP V1 6BC8
MIXER V2A 6U8
OSC V2B 6U8
FINE TUNING
(IF OUTPUT) To TV Schematic
(RF AGC) To TV Schematic
270V
(Filament)
◆ MEASURED FROM PIN 2 OF V3.
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

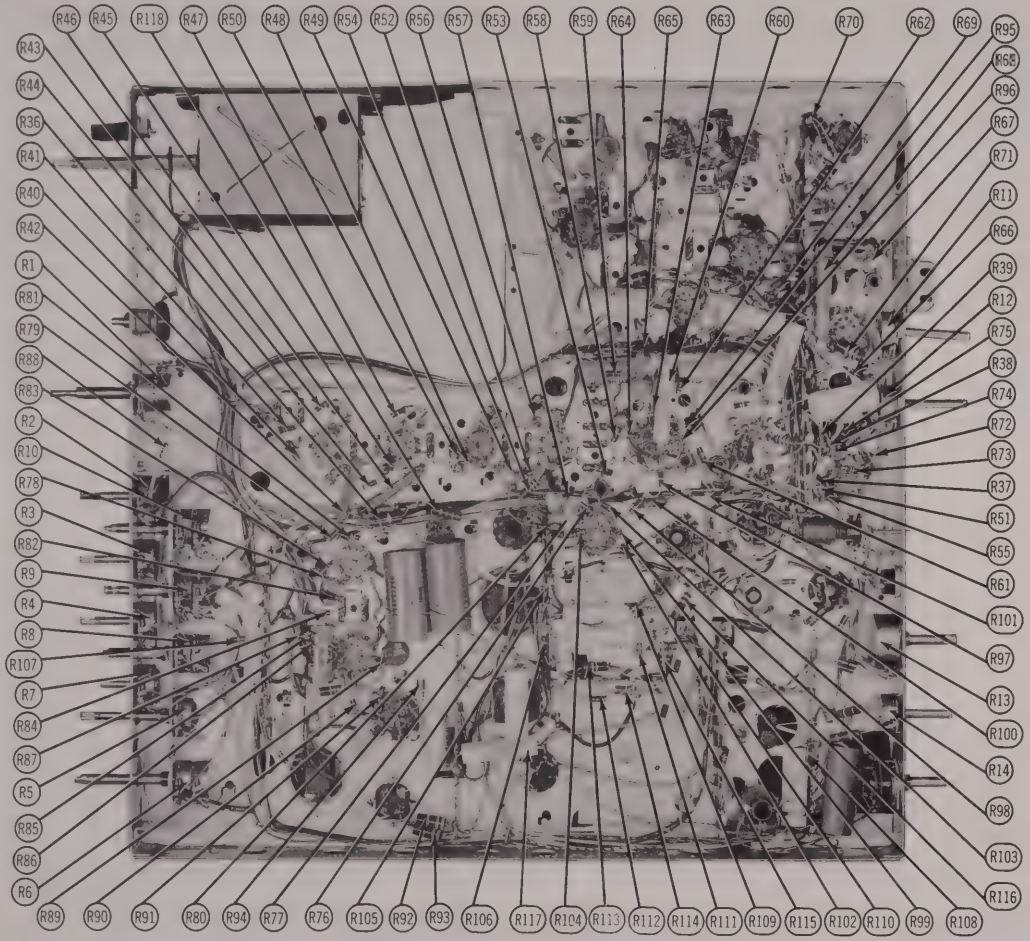
VHF Tuner VTT-83A (Part #1V741746)

TUNER SCHEMATIC

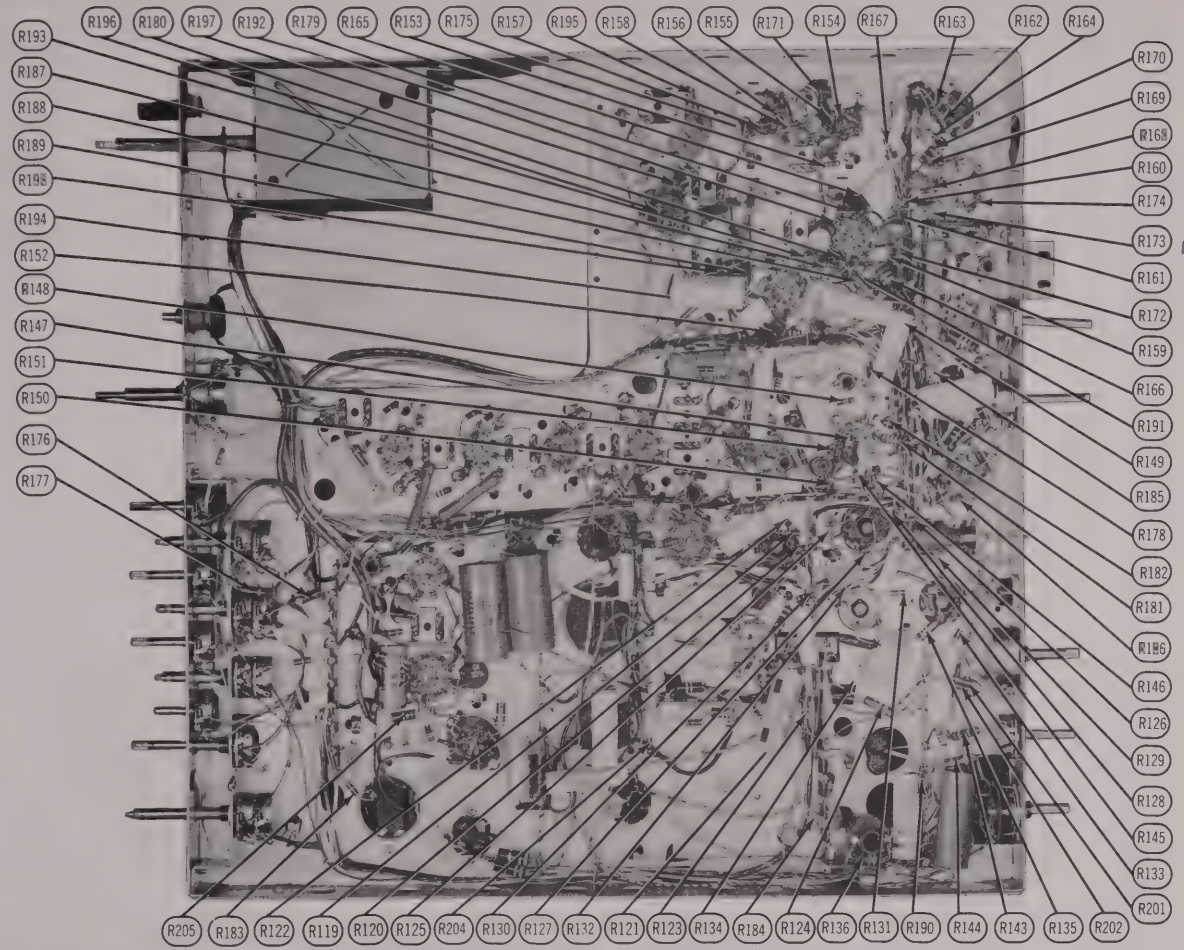


PROPERTY OF
L. F. BLANKEN[illegible]P
3924 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW - RESISTOR IDENTIFICATION R1 THRU R118



CHASSIS BOTTOM VIEW - RESISTOR IDENTIFICATION R119 THRU R 205

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The horizontal hold control should have a sync range of approximately 30 degrees. If the control is too critical, adjust the horizontal oscillator slug (B6) as follows:

1. Set all controls for a normal picture after tuning in a TV station, preferably with a test pattern.

2. Short the horizontal AFC circuit to chassis by connecting a short piece of wire from TP-10 (pin 4 of the service test receptacle) to chassis.

3. Connect a .1MFD 600 volt capacitor between TP-8 and ground of TP-9 (pins 2 and 3 of the service test receptacle) to short out the horizontal oscillator coil.

4. Adjust the horizontal hold control to the point where the picture almost maintains sync.

5. Remove the .1MFD capacitor shunting the horizontal oscillator coil and without changing the setting of the horizontal hold control, adjust the horizontal oscillator slug (B6) to the center of the range in which the picture almost remains stationary horizontally.

6. Remove the shorting wire from TP-10 and chassis, and adjust the horizontal hold control so that no foldover occurs at either side of the screen.

HIGH VOLTAGE ADJUSTMENT

This adjustment sets the proper operating point of the high voltage regulator tube to supply the proper voltage to the picture tube. After adjustment, check the focus, horizontal and vertical size and convergence. USE EXTREME CAUTION DUE TO SHOCK HAZARD.

1. Set the brightness and contrast controls fully counter clockwise and the horizontal size switch for maximum width. Turn the receiver off and allow sufficient time for the high voltage to discharge.

2. Connect the meter between the high voltage anode lead of the picture tube and chassis in any convenient manner. Leave the high voltage lead connected to the picture tube.

3. Turn the set on and allow time for the voltages to reach operating levels and adjust the high voltage regulator control for a reading of 20,000 volts. After adjusting, return all other controls to normal operating positions.

STATIC CONVERGENCE PROCEDURE

1. Remove the back cover and open the top of the cabinet.

2. Remove the octal plug from the small chassis located in the upper right hand side of the cabinet (looking from the rear). This will remove the effect of the dynamic convergence circuits while making static convergence adjustments.

3. Apply power to the receiver and allow a few minutes warm-up period.

4. Connect a white cross hatch pattern to the receiver and adjust the fine tuning for best definition of the pattern.

5. Adjust the brightness and contrast control for a normal picture.

6. Adjust the focus control for best focus.

7. Turn the AGC control clockwise until the receiver overloads and then back off 1/8th turn.

8. Observing the horizontal bars of the cross hatch pattern, de-center the raster vertically and note which color field is off convergence. Any one field may be displaced by as much as one whole line either vertically or horizontally and be very difficult to detect unless this procedure is used. If one field is found to be out of convergence in this manner, roughly converge using the convergence magnets and the blue beam positiong magnets.

9. Turn the receiver off and allow time for the high voltage to discharge. Check and adjust the high voltage as under "High Voltage Adjustments".

10. Adjust the vertical size and linearity controls and the horizontal size switch for proper cross hatch pattern.

11. Adjust the horizontal centering and the vertical centering for proper positioning of the raster.

12. Turn the receiver off and loosen the two screws that hold the deflection yoke in place. Pull the yoke toward the rear of the set as far as possible.

13. Remove the green and blue grid leads from the socket on the main chassis and plug them into the ground receptacles located on the same socket.

14. Turn the receiver on and rotate the red G2 control (R7) fully clockwise. Keep the contrast control as low as possible and the brightness control at normal brightness level.

15. Turn the channel selector to a blank channel so that no pattern is visible on the screen.

16. Position the purity magnet rings so that the tabs are together and produce no effect on the purity of the raster when the two rings are rotated together as a unit.

17. Separate the red tabs of the purity device a small amount so that a weak magnetic field is produced. Now rotate the purity device as a unit until the greatest amount of red area is obtained at the center of the raster. Continue to separate the tabs of the purity device rotating as a unit until the maximum red area is obtained at the center of the raster.

18. Move the yoke forward until the best location is found that will produce the best purity around the edges of the raster. After locating this position, tighten the screws that hold the yoke in place.

19. Adjust the rim magnets located along the outer rim of the picture tube for best red purity along the outer edges of the screen.

20. When the red purity has been adjusted for the best red purity throughout the screen, check the green field by replacing the green lead back in the correct pin receptacle and unplugging the red grid lead and plugging it in the ground receptacle. Do the same with the blue grid lead. Make any necessary compromise adjustments of the purity device to give best purity for all three color fields.

21. Insert the lead of the red gun into the red gun receptacle of the grid lead socket and plug the green and blue gun leads into the grounding receptacle holes.

22. Loosen the screws holding the yoke and slide the yoke backward and forward along the neck of the picture tube to find the best possible position for edge purity and overall purity.

23. Adjust the rim magnets for best edge purity.

24. Check the blue and green fields individually for best purity by grounding the two unwanted guns and sliding the yoke along the tube neck.

25. In the final positioning of the yoke and edge magnets, the individual red, blue and green fields should be pure over the largest possible area of the screen.

26. Reinsert the red, blue and green (G1) leads in their respective receptacle holes, for normal operation.

27. Turn the contrast control to near maximum and the brightness control for a low brightness raster.

28. Adjust the red, green and blue (G2) controls for a gray raster.

29. Retouch the rim magnets to remove any color shading that appears around the edges of the raster. Upon completion of this adjustment, the raster should be a uniform gray over the entire screen.

DEFLECTION FIELD CORRECTION ADJUSTMENTS

1. Disconnect the convergence assembly by unplugging the cable from the convergence chassis.

2. Set all receiver controls for a normal picture with optimum resolution of the cross hatch pattern.

3. Converge the pattern at the center of the screen with the red, blue and green beam positioning magnets and the blue lateral corrector magnet.

4. Observing only the red and green horizontal bars at the center of the picture, adjust the horizontal yoke balance slug (B1) until the red and green horizontal bars or lines are either superimposed upon each other or equally spaced with respect to each other over the entire length of the lines.

5. Again, observing only the red and green lines at the top of the screen, adjust the top horizontal keystone corrector (M15) by twisting both clockwise and counter clockwise until the red and green line are either superimposed or equally spaced from each other over the length of the lines.

6. Repeat procedure of step 5 observing the red and green horizontal lines at the bottom of the screen and adjusting the bottom horizontal keystone corrector.

7. Observing the red and green lines at the top and bottom of the screen, adjust the vertical yoke balance control (R22) so that the lines are either superimposed or equally spaced with respect to each other. Make sure that the red line is either above the green line at both top and bottom or below the green line at both top and bottom.

8. While observing the vertical lines at the left and right hand side of the screen, adjust the blue lateral size switch (M14), so that the blue vertical lines at both edges are spaced between the red and green lines at both edges of the screen. (See Fig. 15).

DYNAMIC CONVERGENCE PROCEDURE

1. Turn the receiver off and plug the convergence assembly octal socket into its receptacle on the convergence subchassis. Turn the receiver back on.

2. Turn the blue horizontal amplitude #1 control (R20A) fully clockwise and the blue horizontal amplitude #2 control (R20B) fully counter clockwise. Maintain focus throughout the convergence procedure.

3. Observe one blue horizontal line at the center of the screen and adjust the blue horizontal phase #1 (B2) for maximum displacement (separation) of the blue line with respect to the red and green lines over the center area of the screen. (See Fig. 16).

4. Turn the blue horizontal amplitude #2 control fully clockwise, then adjust the blue horizontal phase #2 (B3) for MINIMUM displacement of the center blue line with respect to the red and green lines. (See Fig. 17).

5. Turn the blue horizontal amplitude #2 control fully counter clockwise until the center horizontal blue line is parallel to the red and green lines. Reconverge the pattern at the center of the screen using the beam positioning and blue lateral corrector magnets. Recheck the setting of the blue horizontal amplitude #1 control and blue horizontal phase #1 (B2) for best convergence of the blue line with respect to the red and green lines across the center of the screen.

7. If any point along the center blue horizontal line is not converged, adjust the blue horizontal amplitude #2 control and the blue horizontal phase #2 (B3) for optimum convergence.

8. Turn the blue vertical amplitude control (R19B) fully counter clockwise and adjust the blue vertical tilt control (R19A) until the blue line is either superimposed or has equal separation from the red and green lines at the top and bottom of the screen.

9. Observe the blue horizontal line at the center of the screen and adjust the blue vertical amplitude control until the blue line is either superimposed on the red and green lines or is equally spaced with respect to the red and green lines from the top to the bottom of the screen as in Fig. 18.

MISCELLANEOUS ADJUSTMENTS (cont.)

10. Remove the blue grid lead from its receptacle on the main chassis and plug it into the ground pin of the receptacle.

11. Turn the red-green vertical amplitude control (R17B) fully counter clockwise. Converge the red and green rasters at the center of the screen by adjusting the red and green beam positioning magnets. Observe the center vertical red and green lines and adjust the red-green vertical tilt control (R17A) for symmetrical separation of the red line with respect to the green at the top and bottom of the screen as in Fig. 19.

12. Observe the red and green vertical lines thru the center of the screen and adjust the red-green vertical amplitude control until the red and green lines are either superimposed or are equally spaced in relation to each other. Reconverge the pattern at the center of the screen with the red and green beam positioning magnets. Recheck, and if necessary, readjust red-green vertical tilt and amplitude controls for optimum convergence of the center red and green lines from top to bottom.

13. Observe the red and green horizontal lines at the top and bottom of the screen and adjust the red-green vertical dynamic balance control (R21) with a screwdriver and the red and green lines at the top and bottom of the raster are superimposed. Reconverge the center, if necessary.

14. Turn the red-green horizontal amplitude #1 control (R18A) fully clockwise. Turn the red-green horizontal amplitude #2 control (R18B) fully counter clockwise.

15. Adjust the red-green horizontal phase #1 (B4) for maximum separation of the vertical bars at the center of the screen. (See Fig. 19).

16. Turn the red-green horizontal amplitude #2 control fully clockwise. Adjust the red-green horizontal phase #2 (B5) for MINIMUM displacement of the red and green vertical bars at the center of the screen.

17. Turn the red-green horizontal amplitude #2 control fully counter clockwise.

18. Turn the red-green horizontal amplitude #1 control counter clockwise until the red and green vertical bars across the center of the screen are equally spaced with respect to each other across the entire screen. Converge the red and green at the center of the screen using the red and green beam positioning magnets and recheck the adjustment of the red-green horizontal amplitude control (R6) and the red-green horizontal phase #1 (B4) for optimum convergence of the red and green vertical bars across the entire screen. Reconverge the center of the screen using the red and green beam positioning magnets.

19. If the bars are not converged at all points across the center of the screen, rotate the red-green horizontal amplitude #2 control clockwise for optimum convergence of all the bars. The red-green horizontal amplitude #2 control affects the same area of the screen as did the blue horizontal amplitude #2 control. However, the direction of movement is at a different angle for red and green than for blue.

20. Reinsert the blue grid lead into its proper receptacle. If the blue pattern is not converged with the red and green, readjust the proper blue controls as outlined previously for optimum convergence of the blue raster with respect to the red and green.

21. Recheck the center convergence and very carefully adjust the beam positioning magnets and the blue lateral corrector magnet for optimum convergence in the center of the raster. Study the screen carefully and if there are any areas which are not in convergence, a compromise adjustment should be made of the proper controls or slugs for optimum convergence of the areas around the center of the screen.

If the blue field appears to be tilted with respect to the others, rotate the rear cover of the yoke (NOT THE YOKE itself) as required to correct it.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 push-on type control knobs from the front.

2. Remove 8 wood screws and the rear cover.

3. Remove the picture tube socket, power supply plug, filament lead plug, yoke plugs, blue size switch plug, high voltage connector, convergence chassis plug, convergence yoke assembly plug and chassis to power supply ground lead.

4. Remove 2 metal screws holding the chassis to the "U" shaped bracket at the bottom.

5. Push the 2 long rods, at the rear of the cabinet top near the hinges, toward the rear of the cabinet and raise the top, support it by the arm on the side of the cabinet.

6. Remove 4 wood screws holding the 2 "L" shaped brackets holding the chassis to the side of the cabinet.

7. Remove 1 metal screw holding the top "L" bracket to the chassis.

8. Remove the chassis.

9. Remove the convergence chassis by lifting it out of the top.

10. Remove 4 chassis bolts from the power supply and remove the power supply chassis.

PICTURE TUBE REMOVAL

1. Remove the chassis.

2. Place cabinet face down on a pad.

3. Remove the 3 rods holding the picture tube to the front of the cabinet.

4. Open the lid and loosen the bolt in the metal band which supports the rim purity magnets.

5. Remove the blue lateral positioning magnet, purity ring and convergence yoke assembly.

6. Remove the tube, yoke bracket assembly and tube shield.

SAFETY GLASS REMOVAL

NOTE: Before removing the safety glass make sure the set has been off long enough for the high voltage to have discharged.

1. Remove the channel selector and fine tuning knobs.

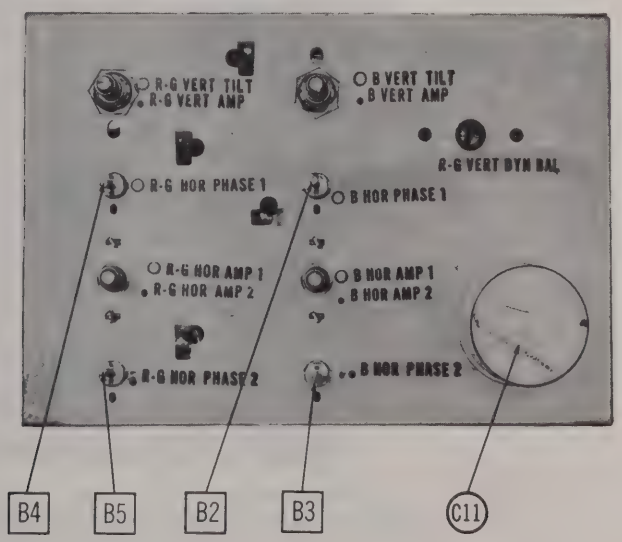
2. Remove 2 phillips head screws and the circular insert exposed by knob removal.

3. Remove 5 metal screws holding the metal trim at the bottom of the safety glass.

4. Remove 4 metal screws and the bottom glass retainer.

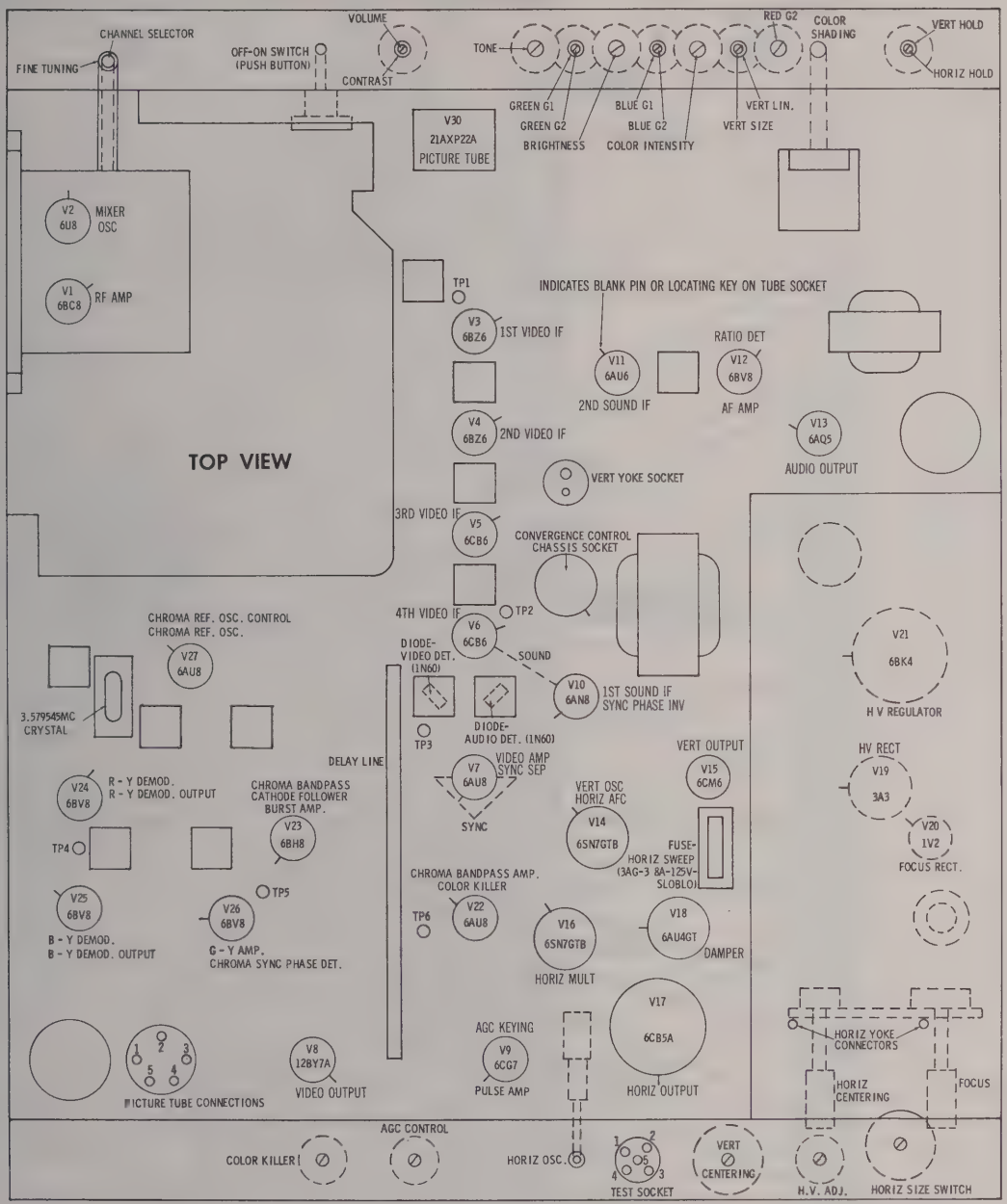
5. Remove 5 wood screws holding the metal trim at the top of the safety glass.

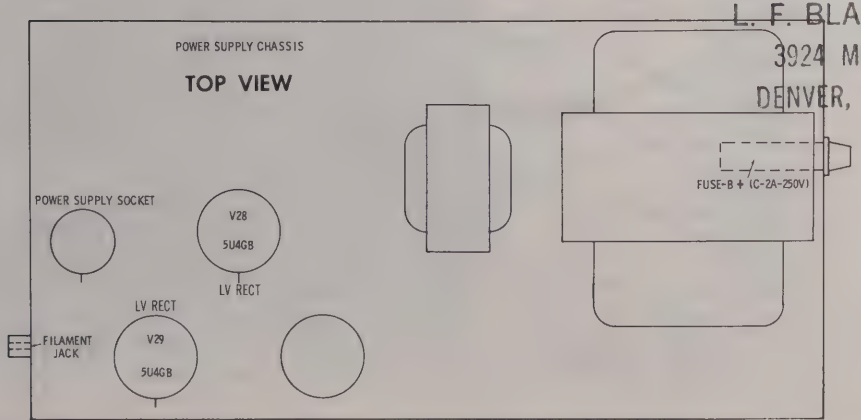
6. Pull the right side of the glass forward and to the right until it clears the channel on the left side, then remove the glass.



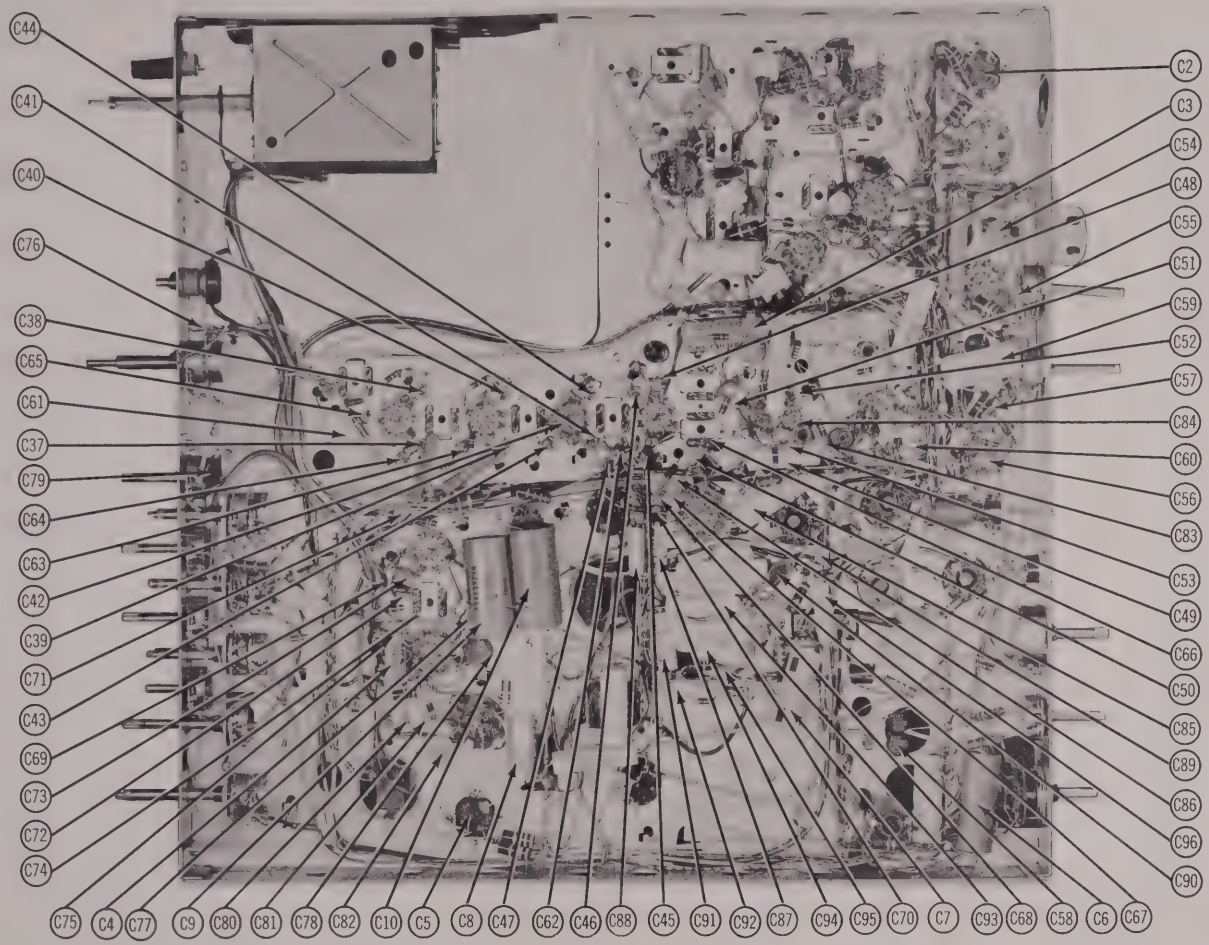
CONVERGENCE CHASSIS TOP VIEW

TUBE PLACEMENT CHART

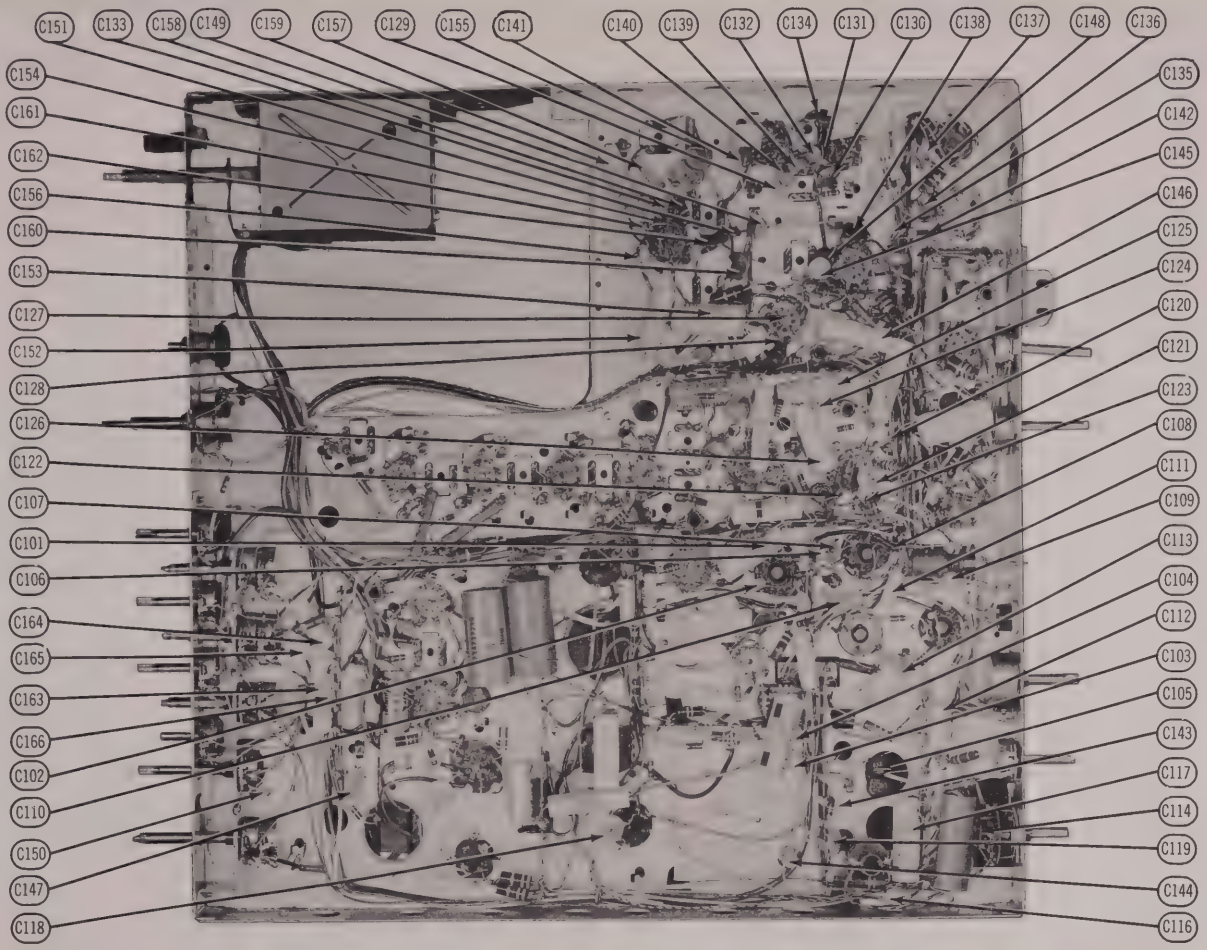




PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW - CAPACITOR IDENTIFICATION C2 THRU C96



CHASSIS BOTTOM VIEW - CAPACITOR IDENTIFICATION C101 THRU C166

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC8	† 3800Ω	INF	INF	0Ω	.1Ω	INF	1.7Meg	0Ω	0Ω
V2	6U8	† 14K	43K	† 270K	0Ω	.1Ω	† 18K	0Ω	0Ω	15K
V3	6BZ6	300K	68Ω	0Ω	.1Ω	† 8800Ω	† 8800Ω	0Ω		
V4	6BZ6	300K	68Ω	0Ω	.1Ω	† 8800Ω	† 8800Ω	0Ω		
V5	6CB6	▲ 0Ω	▲ 120Ω	0Ω	.1Ω	† 1000Ω	† 1000Ω	INF		
V6	6CB6	1000Ω	120Ω	0Ω	.1Ω	▲ 470Ω	† 40K	0Ω		
V7	6AU8	0Ω	1.8Meg	† 1.5Meg	.1Ω	0Ω	750Ω	3500Ω	† 12K	† 6800Ω
V8	12BY7A	500Ω	650Ω	500Ω	.1Ω	.1Ω	0Ω	† 4400Ω	† 22K	500Ω
V9	6CG7	■ 33Ω	37K	330Ω	0Ω	.1Ω	† 1.1Meg	120K	14K	0Ω
V10	6AN8	■ 10K	22K	2200Ω	0Ω	.1Ω	† 1600Ω	† 1600Ω	INF	INF
V11	6AU6	150K	0Ω	0Ω	.1Ω	INF	INF	150Ω		
V12	6BV8	0Ω	4.7Meg	† 470K	.1Ω	0Ω	6800Ω	6800Ω	• 800K	• 800K
V13	6AQ5	470K	330Ω	.1Ω	0Ω	† 2200Ω	† 1600Ω	470K		
V14	6SN7GTB	360K	12K	160K	• 1.4Meg	• ‡4Meg	255Ω	.1Ω	0Ω	
V15	6CM6	† 1700Ω	TP	• 2.3Meg	.1Ω	0Ω	• 2.3Meg	47Ω	NC	† 2700Ω
V16	6SN7GTB	5Meg	† 56K	820Ω	• 100K	† 56K	820Ω	0Ω	.1Ω	
V17	6CB5A	† 11K	0Ω	5.6Ω	1Meg	1Meg	5.6Ω	.1Ω	† 11K	TOP CAP ‡17Ω
V18	6AU4GT	TP	NC	¶	NC	† 20Ω	NC	.1Ω	0Ω	
V19	3A3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡220Ω
V20	1V2	‡• 40K	NC	NC	40Meg	40Meg	NC	NC	NC	• ‡40K
V21	6BK4	† 18Ω	† 10K	NC	NC	• 1.5Meg	NC	† 10K	NC	TOP CAP INF
V22	6AU8	0Ω	• 2Meg	† 24K	.1Ω	0Ω	47Ω	1Meg	■ 1000Ω	† 6800Ω
V23	6BH8	470Ω	3.4Ω	† 6800Ω	0Ω	.1Ω	0Ω	16Ω	10K	† 2200Ω
V24	6BV8	680Ω	INF	† 11K	.1Ω	0Ω	INF	INF	.8Ω	.8Ω
V25	6BV8	390Ω	INF	† 11K	0Ω	.1Ω	INF	INF	.7Ω	.7Ω
V26	6BV8	1200Ω	6800Ω	† 11K	0Ω	.1Ω	800K	1.7Meg	.8Ω	800K
V27	6AU8	390Ω	1.7Meg	† 2700Ω	.1Ω	0Ω	¶	■ 150K	† 5600Ω	† 5600Ω
V28	5U4GB	NC	¶	NC	11Ω	NC	10Ω	NC	¶	
V29	5U4GB	NC	¶	NC	11Ω	NC	10Ω	NC	¶	
V30	21AXP22A	† 10K	• 150K	• † 1.6Meg	† 4400Ω	† 4400Ω	• 120K	• † 1.4Meg	NC	40Meg
						PIN 10 NC	PIN 11 • † 1.5Meg	PIN 12 80K	PIN 13 † 4400Ω	PIN 14 † 10K

† MEASURED FROM PIN 2 OF V29.
‡ MEASURED FROM PIN 3 OF V18.
■ MEASURED FROM 145V SOURCE
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V5.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
TP TIE POINT
NC NO CONNECTION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BC8	
V2	Mixer-Oscillator	6U8	
V3	1st. Video IF Amp.	6BZ6	
V4	2nd. Video IF Amp.	6BZ6	
V5	3rd. Video IF Amp.	6CB6	
V6	4th. Video IF Amp.	6CB6	
V7	Video Amp.-Sync Sep.	6AU8	
V8	Video Output	12BY7A	
V9	AGC Keying-Pulse Amp.	6CG7	
V10	1st. Sound IF Amp.-Sync Phase Inv.	6AN8	
V11	2nd. Sound IF Amp.	6AU6	
V12	Ratio Det.-AF Amp.	6BV8	
V13	Audio Output	6AQ5	
V14	Horiz. AFC-Vert. Osc.	6SN7GTB	
V15	Vert. Output	6CM6	
V16	Horiz. Mult.	6SN7GTB	
V17	Horiz. Output	6CB5A	
V18	Damper	6AU4GT	

ITEM No.	USE	TYPE	NOTES
V19	HV Rectifier	3A3	
V20	Focus Rectifier	1V2	
V21	HV Regulator	6BK4	
V22	Chroma Bandpass Amp.-Color Killer	6AU8	
V23	Burst Amp.-Chroma Cathode Follower	6BH8	
V24	R-Y Demodulator - R-Y Demodulator Output	6BV8	
V25	B-Y Demodulator - B-Y Demodulator Output	6BV8	
V26	Chroma Sync Phase Det.-G-Y Amp.	6BV8	
V27	Chroma Reference Osc. Control - Chroma Reference Osc.	6AU8	
V28	LV Rectifier	5U4GB	
V29	LV Rectifier	5U4GB	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	MOTOROLA PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V30	21AXP22A		21AXP22A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲80	450	23B741233	AFH4-18-45	DO177	FP245.3 TC79	TMD-59	Q-065	R2456 *
B	▲80	450							
C2A	▲80	400	23B740462			FP333.85 TC80			R2458 *
B	■10	400							
C	100	50							
D	▲80	250							
C3	5	300	23K739132	PRS350V4	BR435	TC60	TD-4-450	FM-4504	TVA-1601
C4	10	50	23A90205	PRS50V10	BBR10-50	TC32	TD-10-50	FM-0510	TVA-1304
C5A	■20	250	23B740457	AFH3-132	C1060	FP345.3	TMT-132	Q-370	TVL-3743.7
B	▲20	25							
C	▲40	450							
C6	10	450	23B702450	PRS450V10	BR1045	TC72	TD-10-450	FM-4510	TVA-1705
C7	5	300	23K739132	PRS350V4	BR435	TC60	TD-4-450	FM-4504	TVA-1601
C8	5	10	23A740568	XPP10V5	BBR5-50	TC30	TD-5-25	FM-1504	TVA-1203
C9	450	10	23A732739 ①	NP-PRS10V 450	BR1001 † BR1001	TC1501 † TC1501			R2461 *
C10	450	10	23A732739 ①	NP-PRS10V 450	BR1001 † BR1001	TC1501 † TC1501			R2461 *
C11A	2	10	23B740456	AFH4-09					R2457 *
B	■2	10							
C	▲2	10							
D	▲2	10							
C12	10	15	23K740554	PRS25V10	BBR10-25	TC22	TD-10-25	FM-0210	TVA-1204
C13	10	15	23K740554	PRS25V10	BBR10-25	TC22	TD-10-25	FM-0210	TVA-1204

① Non-polarized unit. Some versions may use a single 1000MFD @ 10V (part #23K741491) to replace C9 and C10.
* Non-catalog item.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C14	47		21R114207	N750-SI 47	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47	N750
C15	150		21R124608	N750-SI 150	TCN-150	C10T15U	TC7-150		5TCU-T15	N750
C16	1000		21A739920	EF-001	MFT-1000				503C-D1	
C17	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	①
C18	2.2		21R115948	NP0-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	
C19	5.6		21A732738							10%
C20	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C21	.5-3		21K735985		829-3		3115-E	CT565A		
C22	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C23	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C24	1.8		21R115961	NP0-SI 1.5		C10V15C	TCO-1.5	ZT-5515	5TCCB-V18	
C25	100		21R120577	SI 100	D6-101	LT6T1	ED-100	UC-531	5GA-T1	
C26	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C27	22		21R124554	NP0-SI 22	TCZ-22	C10Q22C	TCO-22		5TCC-Q22	NP0 5%
C28	.5-3		21K735985		829-3		3115-E	CT565A		
C29	470		21R114554	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C30	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C31	1000		21A739920	EF-001	MFT-1000				503C-D1	
C32	1000		21R115386	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C33	1.0		21R114071	NP0-SI 1.0	TCZ-1				5TCCB-V1	
C34	3.4		21R124489	NP0-SI 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	5TCCB-V33	NP0
C35	10		21R124710							N330
C36	1.0		21R124552							N1500
C37	1000		21A737426	EF-001	MFT-1000				503C-D1	
C38	1000		21A737426	EF-001	MFT-1000				503C-D1	
C39	1000		21A737426	EF-001	MFT-1000				503C-D1	
C40	1000		21A737426	EF-001	MFT-1000				503C-D1	
C41	1000		21A737426	EF-001	MFT-1000				503C-D1	
C42	1000		21A121678	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C43	1000		21R737426	EF-001	MFT-1000				503C-D1	
C44	1000		21A737426	EF-001	MFT-1000				503C-D1	
C45	47		21R122822							N150
C46	470									
C47	1000		21A737426	EF-001	MFT-1000				503C-D1	
C48	1000		21A737426	EF-001	MFT-1000				503C-D1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C165	02	600	8RJ23078	BPD-02	DF-203	CUSB2	ED-02	GEM-612	67M-82	
C166	02	600	8RJ23079	BPD-02	DF-203	CUSB3	ED-02	GEM-613	67M-83	

① Not used in some versions
② Some versions may use a 6803MMT in this application (Part #19K23573).
③ Some versions may use a 10MMF in this application (Part #19K23149).

CONTROLS

ITEM No.	RATING RESIST OHMS	RATING WATT	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω	1	18K74097			UE83	Not Req.	Contrast
B	1Meg	1				Not Req.		Volume - Tap @ 300K
R3	1Meg	1	18K74090			Not Req.	TA35L	Tone
R5	1000Ω	1	18K74099			Not Req.	TA31L	Brightness
R5A	1Meg	1	18K74095			Not Req.	TA35L	Color Intensity
R6A	500Ω	1	18A74145	B-4	A47-500K-S	QU-103	U43	Color Shading
B	Shaft			Not Req.		Not Req.		
R6A	1Meg		18D74098				UE261	Vert. Hold
B	Shaft						Not Req.	Horiz. Hold
R7A	3Meg		18K74094			HU-140	TA36L	Red G3
B	Shaft					TM3-KH	Not Req.	
R8A	750K		18K74097				UE300	Vert. Lin.
B	3Meg						Not Req.	Vert. Size
R9A	500K		18K74098				UE3497	Blue G3
B	3Meg						Not Req.	Blue G3
R10A	500Ω		18K74098				UE94	Green G3
B	350K			B-50	A47-250K-S	QU-130	Not Req.	Green G3
R11A	350K		18K74096	Not Req.	KSR-3	Not Req.	UE261	Color Killer
B	Shaft			Not Req.		A47-300K-S	Not Req.	
R12A	300K	1	18K74093	B-66		QU-139	U43	AGC
B	Shaft			Not Req.		Not Req.	TA36L	
R13A	50Ω	2	18D74093	WW-500		A43-50	WPK-50	Vert. Centering - Wire wound
B	Shaft			Not Req.		Not Req.	R30L	
R14A	100K		18K74096	B-68	A47-500K-S	QU-123	TA85L	High Voltage Adjustment
B	Shaft			Not Req.		Not Req.	Not Req.	
R15	100Ω	1	18A74096				UE84	Horiz. Centering
R16	250Ω	1	18A74093				Not Req.	Focus
R17A	100Ω	1	18B74138				UE84	Red-green Vert. Tilt
B	300Ω						Not Req.	Red-green Vert. Amplitude
R18A	100Ω		18B74153				UE85	Red-green Horiz. Amplitude-I
B	100Ω						Not Req.	Red-green Horiz. Amplitude -2
R19A	100Ω		18B74138				UE84	Blue Vert. Tilt
B	100Ω						Not Req.	Blue Vert. Amplitude
R20A	100Ω		18B74133				UE85	Blue Horiz. Amplitude-1
B	100Ω						Not Req.	Blue Horiz. Amplitude-2
R21	50Ω	2	18A74080					Red-green Vert. Dynamic Balance - Wire Wound
R22	3Ω	2	18K74051					Vert. Yoke Balance - Wire wound

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R22	22K		6R6028	BTS-22K	
R24	47 K		6R6056	BTS-47K	
R25	100K		6R6075	BTS-100K	
R26	470Ω		6R3949	BTS-470	
R27	10K		6R6030	BTS-10K	
R28	39K		6R6039	BTS-4700	
R29	39K		6R6487	BTS-39K	
R30	470Ω		6R3U3520	BTS-47K	
R31	15K		6R6019	BTS-15K	
R32	270K		6R6414	BTS-270K	
R33	5300Ω	1	6R5891	BTS-5300	
R34	3300Ω		6R5851	BTS-3300	
R35	18K		6R2109	BTS-18K	
R36	2700Ω	2	6R3468H	BTS-2700	
R37	1Meg 5%		6R5587		
R38	1Meg 5%		6R5587		
R39	9.2Meg		6RU4U14		
		2%			
R40	470Ω		6R3949		
R41	12K		6R3648G		
R42	8700Ω	4	17K74025? 17K74026	BTS-68	
R43	68Ω		6R3959		
R44	470Ω		6R3949		
R45	10K		6R6230		
R46	8700Ω	4	17K74025? 17K74026		
R47	68Ω		6R3959	BTS-68	
R48	33K		6R6402	BTS-33K	
R49	470Ω		6R3949	BTS-470	
R50	120Ω		6R5551	BTS-120	
R51	330K 5%		6R4005H7		
R52	3900Ω		6R5859		
R53	1000Ω		6R6229	BTS-1000	
R54	39K		6R3588	BTS-39K	
R55	1000Ω		6R6229		
R56	180Ω		6R6351	BTS-180	
R57	470Ω		6R3949	BTS-470	
R58	100K		6R6031	BTS-100K	
R59	4700Ω		6R6080	BTS-4700	
R60	68000Ω	5	17K73835		
R61	10K		6R6320	BTS-10K	
R62	33K		6R6402	BTS-33K	
R63	18K	2	6R6106	BTS-18K	
R64	100Ω		6R6225	BTS-100	
R65	1200Ω		6R6770	BTS-1200	
R66	1500Ω		6R6038	BTS-1500	
R67	22K		6R6028	BTS-22K	Note 1
R68	3900Ω	5	17K74025? 17K74026	PWT-3900	
R69	68K	1	6R3648	BTS-68K	
R70	33K		6R6402	BTS-33K	
R71	56K		6R3648	BTS-56K	Note 1
R72	33K		6R6402		
R73	100K	2	6R6037		
R74	27K	2	6R3U13	BTS-27K	
R75	22K	2	6R3096	BTS-22K	
R76	10K		6R6320	BTS-10K	Note 1
R77	18K		6R6106	BTS-18K	
R78	4700Ω		6R3U1847	BTS-4700	
R79	100Ω		6R6225	BTS-100	
R80	1000Ω	3	6R6301	BTS-1000	
R81	150K		6R6389	BTS-150K	
R82	1000Ω		6R6301	BTS-1000	
R83	150Ω		6R6375	BTS-150	
R84	180Ω		6R5640	BTS-180	
R85	6800Ω		6R6428	BTS-6800	
R86	6800Ω		6R6428	BTS-6800	
R87	33K		6R6402	BTS-33K	
R88	68K		6R6070	BTS-68K	
R89	4.7Meg		6R6445	BTS-4.7Meg	
R90	470K		6R6377	BTS-470K	
R91	470K		6R6377	BTS-470K	
R92	3300Ω	2		BTS-3300	Note 2
R93	3300Ω	2		BTS-3300	Note 2
R94	3300	1	6R6254	BTA-330	
R95	1.5Meg		6R6460	BTS-1.5Meg	
R96	270K		6R6414	BTS-270K	
R97	1.5Meg		6R6460	BTS-1.5Meg	
R98	470K		6R6377	BTS-470K	
R99	22K		6R6397	BTS-22K	
R100	6800Ω	1	6R6428	BTS-6800	
R101	3300Ω		6R6585	BTS-3300	
R102	2200Ω		6R6069	BTS-2200	
R103	22K		6R6397	BTS-22K	
R104	33K		6R6391	BTS-22K	
R105	150K		6R6389	BTS-150K	
R106	1Meg		6R6046	BTS-1Meg	
R107	2.2Meg		6R6453	BTS-2.2Meg	Note 3
R108	150K		6R6389	BTS-150K	
R109	2.2Meg		6R6453	BTS-2.2Meg	
R110	68K	1	6R6336	BTS-68K	
R111	180Ω		6R5640	BTS-180	
R112	1050Ω		6R6232H	BTS-2000	Note 4
R113	120K	1	6R6988	BTA-120K	Note 5
R114	270K		6R6414	BTS-270K	Note 6
R115	33K	1	6R6400	BTA-33K	
R116	47Ω	1	6R3563	BTA-47	
R117	3000Ω	5	17K74050	PWT-2000	
R118	1200Ω	1	6R5770		
R119	100K		6R6031		
R120	190K		6R6075		
R121	12K		6U34850	BTS-12K	
R122	150K		6R6389		
R123	4700Ω		6R5050		
R124	68K	1	6R6336	BTA-68K	
R125	4.7Meg		6R3U23	BTA-4.7Meg	
R126	5600Ω		6R6417		
R127	820Ω		6R6399	BTS-820	
R128	56K		6R6378		
R129	56K		6R6378		
R130	5600Ω		6R6417	BTS-5600	
R131	100Ω		6R6031	BTS-100	
R132	1Meg		6R6046	BTS-1Meg	
R133	82Ω		6R6057	BTS-18	
R134	11K	10	17K74173H	1 3/4A-11K	
R135	5.6Ω 5%	1	6A46B139		

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R172	12K	2	6R5756	BTS-12K	
R173	270K		6R6414	BTS-270K	
R174	330K		6R2096	BTS-330K	
R175	680Ω		6R6050	BTS-680	Note 7
R176	1Meg	1	6R5767	BTA-1Meg	
R177	2.2Meg		6R201	BTA-2.2Meg	
R178	10Meg		6R2109	BTS-10Meg	
R179	2.2Meg		6R453	BTA-2.2Meg	
R180	22Meg		6R4685H	BTS-22Meg	
R181	39K	1	6R5588	BTA-39K	
R182	68K		6R6336	BTA-68K	
R183	4700Ω		6R6080	BTS-4700	
R184	27K		6R6414	BTS-27K	Note 8
R185	33Ω		6R2036	BTS-33	
R186	330Ω		6R6022	BTS-330	
R187	15K		6R5565	BTS-15K	
R188	2200Ω	1	6R6409	BTA-2200	
R189	10K		6R6320	BTS-10K	
R190	10K		6R6320	BTS-10K	
R191	1Meg 5%		6R5587	BTS-1Meg 5%	
R192	1Meg 5%		6R5587	BTS-1Meg 5%	
R193	10K		6R6054	BTS-10K	
R194	15K		6R6477	BTS-15K	
R195	2200Ω	1	6R6409	BTA-2200	
R196	390Ω		6R5554	BTS-390	
R197	150K		6R6389	BTS-150K	
R198	56000Ω	2	6K22356	BTS-5600	
R199	100Ω		6R6328	BTS-100	
R200	100Ω		6R6328	BTS-100	
R201	220		6R1848	BTS-22	
R202	220		6R1848	BTS-22	
R203	500Ω	35	17U12451		
R204	10K		6R6320	BTS-10K	Note 1
R205	6.8Ω 5%	1	6R6031		
R206	100K		6R6031	BTS-100K	Note 1

Note 1 Not used in some versions
Note 2 Some versions may use a single 1.6K, 2 W in this application.
Note 3 Some versions may use a 1Meg in this application.
Note 4 Some versions may use a 6.8Ω, 1W
Note 5 Some versions may use a 100K, 1W in this application
Note 6 Some versions may use a 33K, 1W in this application.
Note 7 Some versions may use a 1000Ω in this application.
Note 8 Some versions may use a 10K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MOTOROLA PART No	REPLACEMENT DATA Halldorson PART No	REPLACEMENT DATA Merit PART No	REPLACEMENT DATA Stancor PART No	REPLACEMENT DATA Thordarson PART No	REPLACEMENT DATA Triad PART No
T1	117VAC	760VCT @ 4.2A	5V @ 6A	6.3V @ 4.5A	28C73867I					
				SEC. 4 6.3V @1.5A						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	MOTOROLA PART No.	Halldorson PART No	Merit PART No	RCA TYPE No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Oscillator	25K74055-H	B6704	A-3006	207T1	V406	A-8125	26A05	A-13220
T3	Alt. Vert. Oscillator	25B73719	B6704	A-3006	207T1	V406	A-8125	26A05	A-13220
T4	Vert. Output Alt. Vert. Output	25C73256-A 25C73256							
T5	Yoke: Horiz (21M2)	24K74146?							
	Vert (20M2M)								
T6	Yoke Rear Cover	1V740803							
	Horiz. Yoke	24B73289							
	Balance Coil (.5-.8MH)								
T6	Blue Horiz. Size Coil	24K74218							
T7	Horiz. Output	24K74154							
	Primary Coil	24C74154							
	Secondary Coil	24B74154							
T8	Horiz. Isolation Choke	24B74133							
T9	Horiz. Size Coil (1.2MH)	24B74359							
T10	Vert. Convergence	25B74030							
T11	Blue Horiz. Phase #1 Coil (8-30MH)	24K74106							
T12	Red & Green Horiz. Phase #1 Coil (3-8 5MH)	24B73673							
T13	Red & Green Horiz. Phase #2 Coil (3-8 5MH)	24B73673							
T14	Blue Horiz Phase #2 Coil (3-8.5MH)	24B73573							
T15	Conv. Yoke Assy. Green Conv. Coil Blue Conv. Coil Red Conv. Coil	24C74084 24K74215 24K74035 24K74036							

① Drill new mounting hole(s)
② Includes rear cover and control case assembly.
③ Complete assembly. Includes primary and secondary coils
④ Includes ring and magnet pieces.
⑤ Complete assembly. Includes green, blue and red convergence coils.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	IMPEDANCE SEC	MOTOROLA PART No.	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T16	4800Ω	3-4Ω	25C73887	21U07 ①	A-3019	A-3877 ①	28B49	S-52	① Drill one new mounting hole.

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	1	200	8R.5173	P388N-1	DF-104	CUB2P1		GEM-301	37M-P1	
C50	1000		21A21678	BPD-06	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C51	1000		8.R46127	BPD-06	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C52	10		21RJ844	WPG-S110	TCC-10	C10Q2U	TCC-10	ZT-541	5TCU-Q47	10%
C53	47		21RJ4307	N750-S1 47	TCN-47	C10Q4TU	TCC-47	NT-5447	5TCU-Q47	N750
C54	120		21RJ4167							N470
C55	3700			BPD-0035	DF-273	L10DB7	ED-0037	UC-5337	5GA-D37	
C56	1000		21RJ2946	BPD-01	DD-103	BYA6BI	ED-01	DC51	58K-S1	
C57	1000		21RJ2946	BPD-01	DD-103	BYA6BI	ED-01	DC51	58K-S1	
C58	1000	2000	21RJ4456	HVD-30-1000	DD30-103	HVB30DI	HD3-1000	DC3031	30HKD-D1	
C59	1000	100	8.L12045	P388N-35		BYA6P1DI		GEM-3035	37M-P35	
C60	470		8R.16554	BPD-0004T	DF-471	BYA6DI	ED-470	UC-5347	5GA-T47	
C61	35	100	8R12245	P388N-35		CUB3P35		GEM-3035	37M-P35	
C62	1000		21A73426	EF-001	MFT-1000				30JC-D1	
C63	1000		21A73426	EF-001	MFT-1000				30JC-D1	
C64	1000		2A73426	EF-001	MFT-1000				30JC-D1	
C65	1000		21A21678	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C66	10		21RJ2976							N150
C67	100		21RJ4068	N750-S1 100	TCN-100	C10TU	TCC-100	NT-531	5TCU-T1	N750
C68	1000		21RJ5312	BPD-005	DD-503	BYA6DE	ED-005	DC525	58K-D5	
C69	5000		21RJ5312	BPD-005	DD-503	BYA6DE	ED-005	DC525	58K-D5	
C70	5000		21RJ5312	BPD-005	DD-502	BYA6DE	ED-005	DC525	58K-D5	
C71	100		21RJ4068	N750-S1 100	TCN-100	C10TU	TCC-100	NT-531	5TCU-T1	N750
C72	5000		21RJ5312	BPD-005	DD-503	BYA6DE	ED-005	DC525	58K-D5	
C73	5000		21RJ5312	BPD-005	DD-502	BYA6DE	ED-005	DC525	58K-D5	
C74	80		2.AJ23244							N150
C75	470		21RJ2.79?	BPD-00047	DD-471	BYA6DT4E5	ED-470	UC-5347	5GA-T47	
C76	1000		21.AJ2379	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C77	470		21RJ4021	BPD-00047	DD-471	BYA6DT4E	ED-470	UC-5347	5GA-T47	
C78	10000		21RJ2946	BPD-01	DD-103	BYA6BI	ED-01	DC51	58K-S1	
C79	470		21RJ4021	BPD-0047	DD-473	BYA6DT4E	ED-0047	UC-5347	5HK-D47	
C80	4700		21RJ2049	BPD-0047	DD-472	BYA6DH4E	ED-0047	UC-5347	5HK-D47	
C81	4700		21RJ2049	BPD-0047	DD-472	BYA6DH4E	ED-0047	UC-5347	5HK-D47	
C82	4700		21RJ2049	BPD-0047	DD-472	BYA6DH4T	ED-0047	UC-5347	5HK-D47	
C83	1000	400	8R.2.1.2	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C84	220		2.AJ232420	BPD-00022	DD-331	L10T22	ED-220	UC-5330	5GA-T22	
C85	05	600	8R.2005	BPD-05	DF-503	CUB5E5		GEM-515	67M-55	
C86	05	600	8R.1287	BPD-005	DF-503	CUB5E5	ED-5000	GEM-435	67M-55	
C87	015	200	8R.12787	BPD-015	DD6-153	CUB5E15		GEM-2115	67M-215	
C88	005	600	8R.787	BPD-005	DF-503	CUB5E5	ED-5000	GEM-515	67M-55	
C89	100		21RJ4036	N750-S1 100	TCN-100	C10TU	TCC-100	NT-531	5TCU-T1	N750
C90	470		21RJ2.84	BPD-0047	DD-471	BYA6DT4E	ED-0047	UC-5347	5HK-D47	
C91	03	400	8R12574	BPD-03	DF-303	CUB4E3		GEM-413	47M-33	
C92	03	400	8R12574	BPD-03	DF-303	CUB4E3		GEM-413	47M-33	
C93	03	400	8R12574	BPD-03	DF-308	CUB4E3		GEM-413	47M-33	
C94	03	600	8R.23262	BPD-03	DF-303	CUB4E3		GEM-613	67M-83	
C95	4500	2000	21RJ4161	HVD-30-1500	DD30-152	HVB30DI5	HD3-1500	DC3025	30HKD-D15	
C96	003	600	8R12760	P1088N-01	DDH32	CUB1G01		GEM-1031	10TM-S1	
C97	1000	400	8R.2.1.2	BPD-001		CUB4G01		GEM-4127	47M-S1	
C98	02	200	8R.79257	P288N-03	DD-303	CUB2E3	ED-02	GEM-213	37M-02	
C99	006	200	8R.79256	P288N-006		CUB2D6	ED-6000	GEM-626	37M-D6	
C100	006	200	8R.79258	P288N-006		CUB2D6	ED-6000	GEM-626	37M-D6	
C101	470		21R.10121	BPD-00047	DD-471	BYA6DT4E	ED-470	UC-5347	5GA-T47	
C102	1000		21RJ4.1217	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C103	900	600	8R12203	BPD-002	DD-102	CUB4DI	ED-1000	GEM-612	67M-D1	
C104	900	600	8R12563	BPD-002	DD-202	CUB4D2	ED-3000	GEM-623	67M-D2	
C105	1000	2000	21RJ4456	HVD-30-1000	DD30-103	HVB30DI	HD3-1000	DC3031	30HKD-D1	
C106	003	600	8R12569	BPD-003	DE-303	CUB3E3	ED-3000	GEM-633	67M-D3	
C107	1000	400	8R12.1.2	BPD-01	DD-103	BYA6BI	ED-01	DC51	58K-S1	
C108	680		21.AT36046	1467-00068		1H5T68			MS-368	
C109	047	400	8A74424	1467-00047	DD-473	CUB2D47	ED-4700	GEM-6247	67M-D47	
C110	470		21R1673	1467-00047	DD-471	CW5T47	ED-470	UC-5347	5GA-T47	
C111	005	400	8R.12787	BPD-006	DD-502	CUB5D6	ED-5000	GEM-435	67M-D5	
C112	006		8R.2.096	P488N-1		CUB4P1		GEM-4105	47M-P1	
C113	80	5000	21RJ255.1				HDE-180	DC9031S		10%
C114	0.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C115	500	5000	21RJ2536	RVD-80-4700	DD60-502		HDE-470	60HKD-T47		
C116	6.8		21RJ2.1.2	P388N-1	DF-104	CUB2P1		GEM-301	37M-P1	5%
C117		500	8R.2.169	P488N-1	DF-104	CUB4P1		GEM-4105	47M-P1	
C118	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C119	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C120	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C121	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C122	270		21RJ1246							N2200
C123	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C124	100		21.AR42726	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C125	33		21.R12545	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C126	33		21.R12545	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C127	1000		21.R12.205	BPD-003	DD-103	BYA6DI	ED-3000	DC523	58K-D3	
C128	1000		21RJ4.1.27	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C129	1000		21RJ1965		DF-104	CUB2P1		GEM-301	37M-P1	
C130	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C131	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C132	.0000		21.AR42726	BPD-01	DD-102	BYA6SI	ED-1000	DC51	58K-S1	
C133	33		21.R12546	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C134	33		21.R12546	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C135	1000		21RJ4.1.27	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C136	1000		21RJ4.1.27	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C137	1000		21RJ4.1.27	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C138	270		21RJ1246							N220
C139	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C140	100		21.R12546	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C141	33		21.R12546	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C142	1000		21.R12.205	BPD-003	DD-103	BYA6DI	ED-3000	DC523	58K-D3	
C143	1000		21.R12.227	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C144	1000		21RJ1965		DF-104	CUB2P1		GEM-301	37M-P1	
C145	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C146	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C147	.0000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C148	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C149	1000		21RJ2.1.2	P388N-1	DF-104	CUB2P1		GEM-301	37M-P1	
C150	1000		21RJ1965		DF-104	CUB2P1		GEM-301	37M-P1	
C151	22		21RJ2539							N150
C152	47		21RJ4207	N750-S1 47	TCN-47	C10Q4TU	TCT-47	NT-5447	5TCU-Q47	N750
C153	1		21RJ2114	WPG-S1 10	TCZ-10	C10Q1C	TCC-10	ZT-541	5TCC-Q1	10%
C154	1	400	8R.2.006	P488N-1	DF-104	CUB4P1		GEM-401	47M-P1	
C155	1	400	8R.2.008	P488N-1	DF-104	CUB4P1		GEM-401	47M-P1	
C156	10		21RJ2114	WPG-S1 10	TCZ-10	C10Q1C	TCC-10	ZT-541	5TCC-Q1	10%
C157	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C158	270		21RJ1246							N220
C159	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C160	33		21.R12546	N750-S1 33	TCN-33	C10Q3SU	TCT-33		5TCU-Q33	N750
C161	1000		21RJ3678	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C162	1000		21RJ4.1.27	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C163	01	1000	8R.2780	P1088N-01		CUB1G01		GEM-1031	10TM-S1	
C164	330		21RJ4014	BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C165	02	600	8RJ23078	BPD-02	DF-203	CUSB2	ED-02	GEM-612	67M-82	
C166	02	600	8RJ23079	BPD-02	DF-203	CUSB3	ED-02	GEM-613	67M-83	
C167	1000		21RJ4.1.27	BPD-001	DD-103	BYA6DI	ED-1000	DC53	58K-D6	
C168	680		21RJ3078	P388N-35		CUB3P35		GEM-3035	37M-P35	
C169	25	100	8R12045	P388N-25					37M-P25	
C170	1000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C171	10000		21.AR42726	BPD-01	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C172	1	2	21RJ3454							①
C173	100		21RJ3024	NPO-S1 100	TCZ-100	C7AST1C	TCC-100	ZT-531	5TCC-T1	NPO
C174	56		21RJ5641	N750-S1 56	TCN-56	C10Q5SU	TCT-56			N750
C175	1	400	8R12005	P488N-1	DF-104	CUB4P1		GEM-401	47M-P1	
C176	.0000		21.AR42726	BPD-0.	DD-103	BYA6SI	ED-01	DC51	58K-S1	
C177	.0000		21.AR42726	BPD-001	DD-103	BYA6DI	ED-01	DC51	58K-S1	
C178	10

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	50K740265	8A12R	

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L1	VHF Ant. Coils	1C739266	Complete wafer assy., Includes C14, C15, C19
L2	Fil. Choke	24K730391	
L3	Neut. Coil	24A739397	
L4	VHF RF Coils	1C739264	Complete wafer assy., Includes C24, C25, R26
L5	Mixer Grid Coils	1C739265	Complete wafer assy., Includes C27, R27
L6	Osc. Coils	1K738928	Complete wafer assy., Includes C35, C36, R34
L7	Mixer Plate Coil	24B741732	

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L8	1st. Video IF	24B741417				Includes coupling coil, resistor and 41.25MC trap
L9	Fil. Choke	24A721274	19-1001	BC-562	4604	1.4 Microhenries
L10	2nd. Video IF	24B740980	17-5003	TV-128	6233	Includes 47.25MC Trap
L11	Fil. Choke	24A721274	19-1001	BC-562	4604	1.4 Microhenries
L12	3rd. Video IF	24B740982				Includes 39.75MC Trap
L13	Fil. Choke	24A721274	19-1001	BC-562	4604	1.4 Microhenries
L14	4th. Video IF	24B740984	17-5014	TV-126	6234	
L15	RF Choke	24K737829	19-1001	BC-562	4604	1.27 Microhenries
L16	5th. Video IF	24B741408				Includes caps., resistor, resonant coil (part #24R125367), and M3
L17	Video Det. Assy.	24B741410				Includes 41.25MC Trap, caps., resistor, two 10 microhenry coils (part #24R125367), and M4
L18	Series Peaking Coil	24K737447	19-3075	TV-186	6172	80 Microhenries
L19	Shunt Peaking Coil	24K736008	19-3250	TV-185	6130	270 Microhenries
L20	Shunt Peaking Coil	24K737447	19-3075	TV-186	6172	80 Microhenries
L21	Series Peaking Coil	24K740642	19-3180 *	TV-184 *	6180 *	180 Microhenries, wound on 1800Ω resistor
L22	Series Peaking Coil	24K740546	19-4060 ■		6110 ▲	56 Microhenries, wound on 3300Ω resistor
L23	3.58 MC Trap	24B740553	20-1004 ‡	TV-151 †		
L24	Series Peaking Coil	24K736963	19-3500	TV-188	6138	470 Microhenries - Note 1
L25	Shunt Peaking Coil	24K736008	19-3250	TV-185	6130	270 Microhenries
L26	RF Choke	24R119889	19-1005	BC-566	4612	10 Microhenries
L27	1st. Sound IF	24B739448	17-3402			
L29	2nd. Sound IF	24K739447				
L29	Ratio Det.	24B736673	17-3497	TV-115	6205	
L30	4.5MC Trap	24B740553	20-1004	TV-151	1469	
L31	Chroma Grid Coil	24K741610	17-6011			
L32	Chroma Plate Coil	24K741609				Note 2
L33	Bandpass Grid Coil	24K741609	17-6011			
L34	Bandpass Cathode Trans.	24B741402				
L35	Resonant Coil	24B738674				3.58MC, 825 Microhenries
L36	Resonant Coil	24B738674				3.58MC, 825 Microhenries
L37	Series Peaking Coil	24K741492	19-3500 ▲	TV-188 ▲	6138 ▲	470 Microhenries, wound on 8200Ω resistor
L38	Resonant Coil	24B738674				3.58MC, 825 Microhenries
L39	Resonant Coil	24B738674				3.58MC, 825 Microhenries
L40	Burst Amp. Plate Coil	24K742661	17-6011			Note 3
L41	Series Peaking Coil	24K740545				27 Microhenries, wound on 560Ω resistor
L42	Reactance Plate Coil	24B741405				Includes Cap.
L43	Osc. Screen Coil	24B741403				Includes Cap.
L44	Resonant Coil	24B738674				3.58MC, 825 Microhenries
L45	Color AFC Trans.	24B741402				
L46	Quadrature Trans.	24B741404				Includes Caps.
L47	RF Choke	24K740416	19-1005	BC-566	4612	10 Microhenries

* Parallel with 1800Ω resistor.
■ Parallel with 3600Ω resistor.
▲ Parallel with 3300Ω resistor.
▲ Parallel with 8200Ω resistor.
† Remove 47MMF and replace with 120MMF Cap.
‡ Parallel with 120MMF Cap.
Note 1. Some versions may use 270 microhenries wound 10K resistor (Part #24K740643) in this application.
Note 2. Some versions may use part #24K741610 in this application.
Note 3. Some versions may use part #24K741609 in this application.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L48	35Ω		1V741392	19-1576 *	TV-163 *	6210 *			HS-5 *	11.8 - 60 Millihenries

* Fabricate mounting.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L49	.530A	18Ω	.75 HY						C-40X ①

① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	C *	2A 250V	65A742693	9B742694	332002 (C 2A)	346006	C2	HC 1 3/4 to 2 1/2
M2	3AG	3/8A 125V S/B	65K739192	31A737466	313.375 (3AG 3/8A S/B)	357001	MDL 3/8	4405

* Some versions may use 2A P/T.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N60	48C739300 ①	1N60	1N60	Audio Det. (Clip-in)
M4	1N60	48C739300 ①	1N60	1N60	Video Det. (Clip-in)

① Some versions use part #48K741280 in this application.

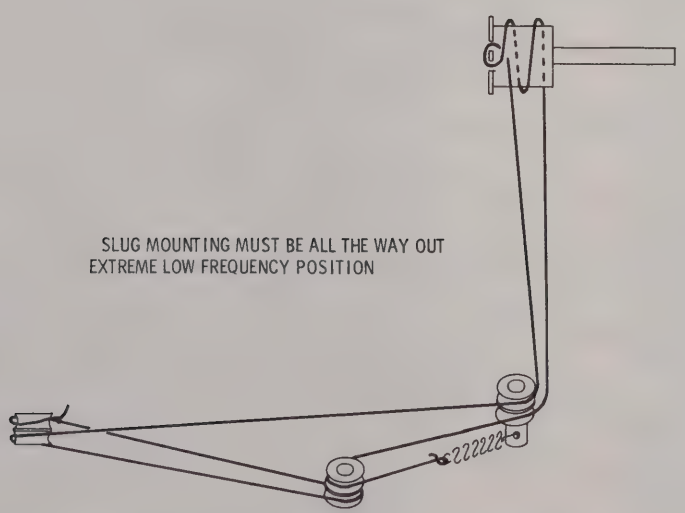
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M5	Crystal	48B732230	3.579545MC
M6	Pilot Light	65X10867	Type #44
M7	Tuner	1V741746	VHF, VTT-83A (Ch. TS-905)
	Tuner	1V741750	VHF, VTT-83Y (Ch. TS-905Y)
	Tuner		UHF, TT-87 (Ch. TS-905Y)
M8	Delay Line	24B739071	
M9	Switch	40A740354	Horiz. Size
M10	Switch	40B739693	On-off (Pushbutton)
M11	Field Neutralizer	1D740647	Assy. (Includes Rim Purity Magnets)
M12	Magnet	59A734620	Purity
M13	Magnet	59K742713	Beam Position (Red, green, blue)
M14	Magnet	1C740556	Assy., Lateral (Includes blue size switch)
M15	Keystone Adjustment	1V740603	Includes yoke rear cover

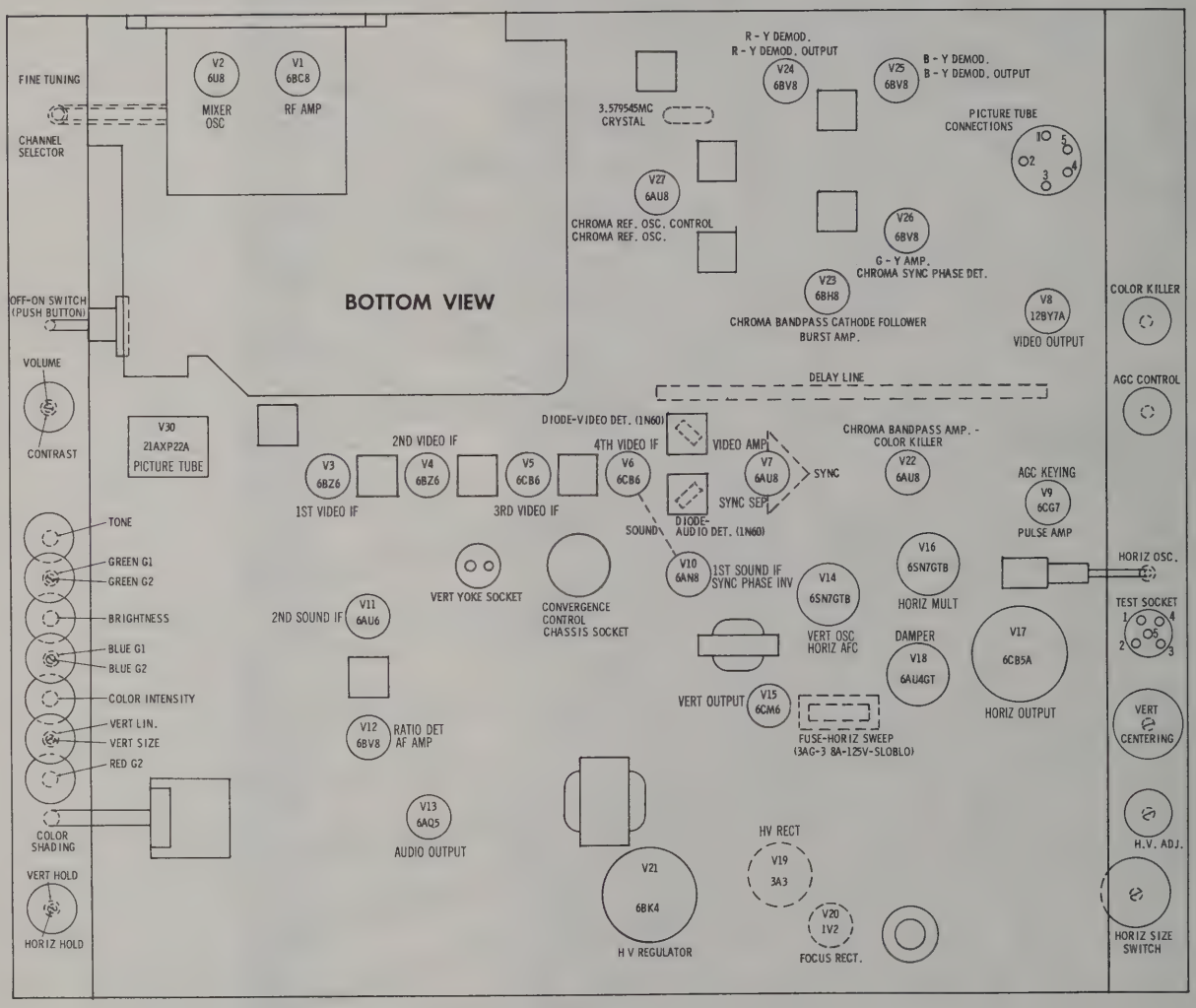
CABINETS & CABINET PARTS

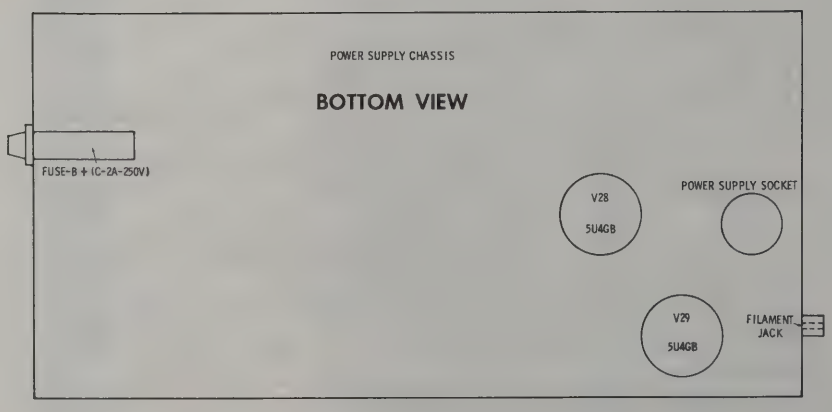
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	61D740931	Clear
Mask	13F740677	
Knob	36K740976	VHF Channel Selector - Models 21CT2B, M
Knob	36C740975	VHF Channel Selector - Models Y21CT2B, M
Knob	36C740956	Fine Tuning
Knob	36B738678	Volume
Knob	36B738701	Contrast
Knob	36B730229	Tone, brightness, color intensity, color shading
Cabinet	16K741151	Oak - Models 21CT2B, Y21CT2B
Cabinet	16E741150	Mahogany - Models 21CT2M, Y21CT2M

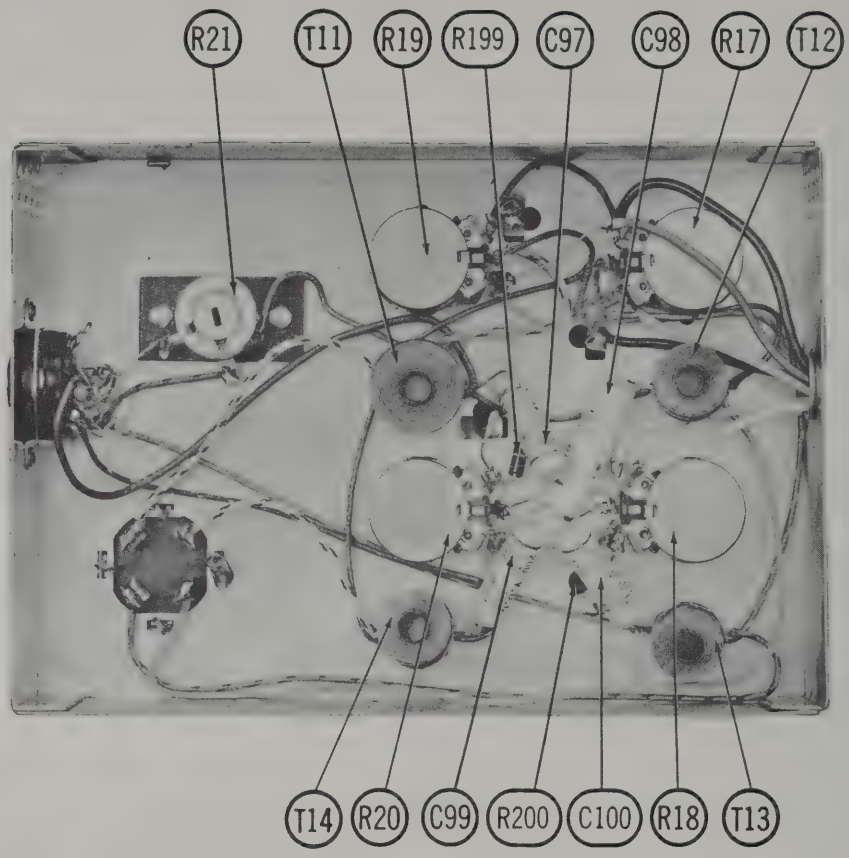


UHF DRIVE CORD STRINGING

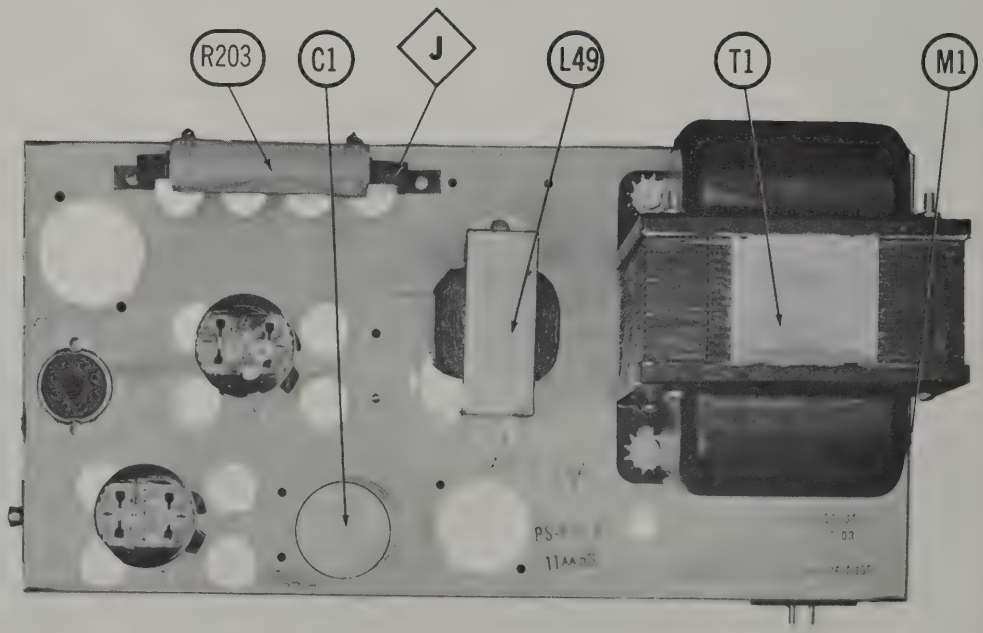




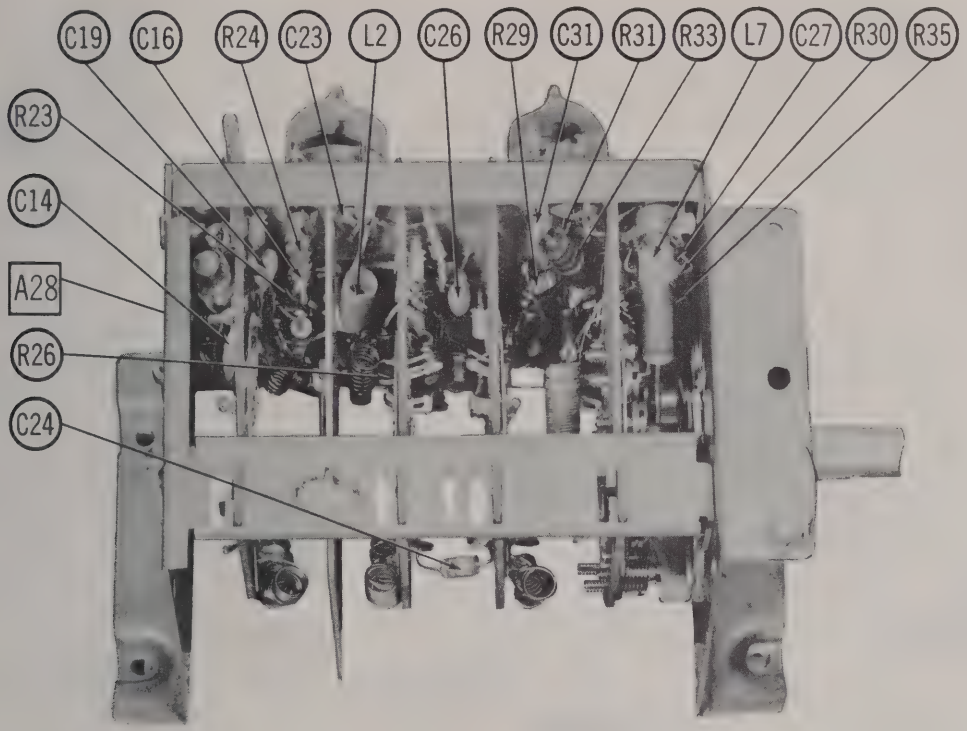
TUBE PLACEMENT CHART



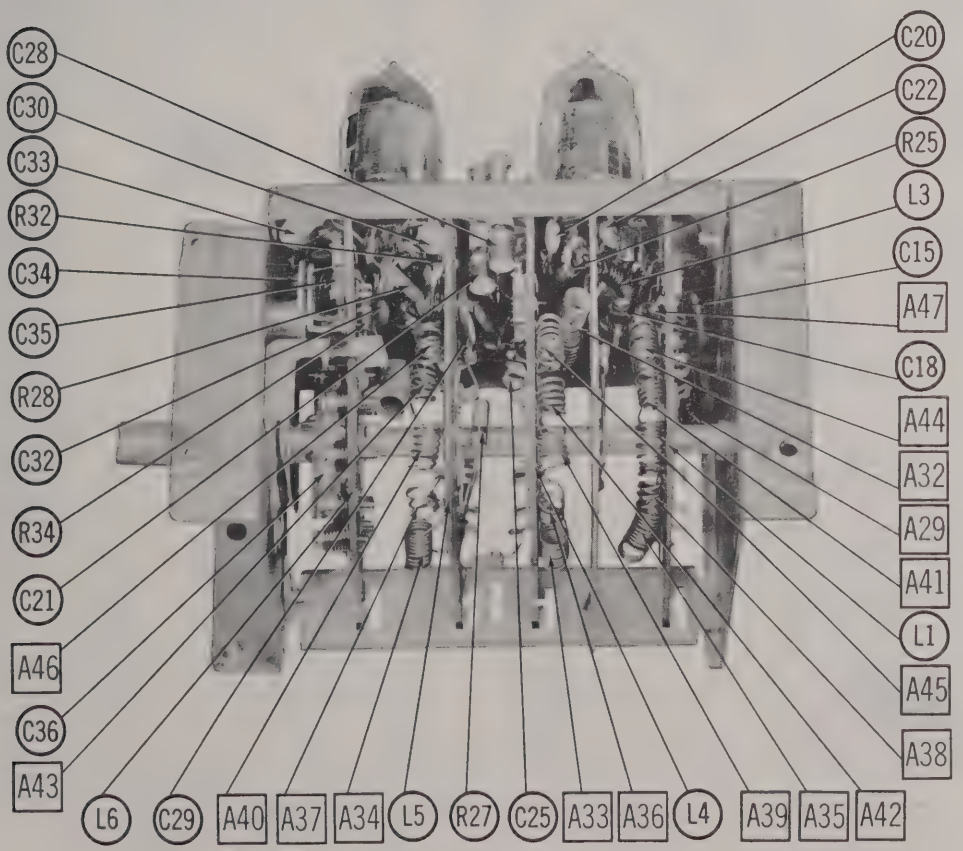
CONVERGENCE CHASSIS BOTTOM VIEW



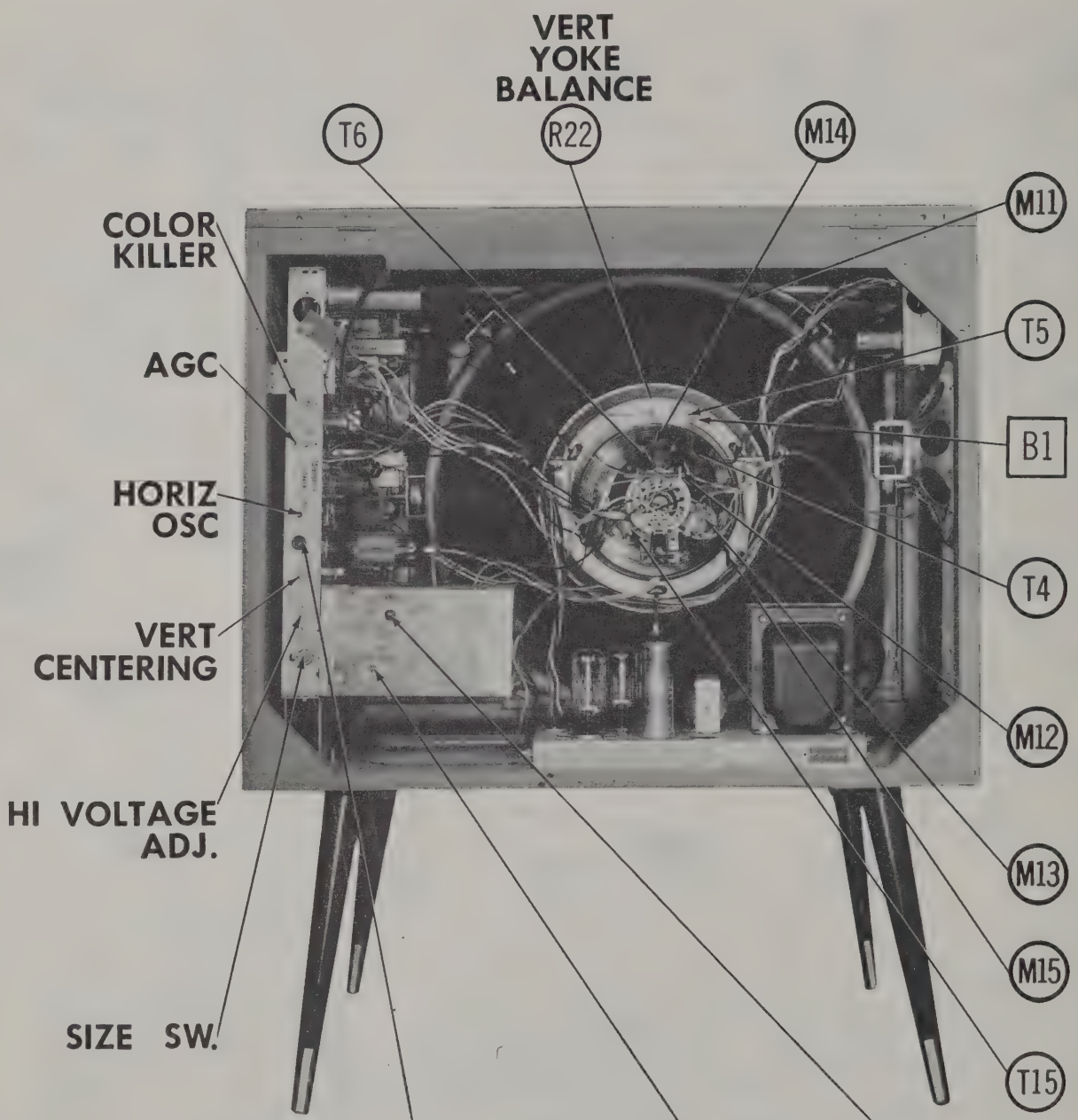
POWER CHASSIS



RF TUNER-LEFT SIDE



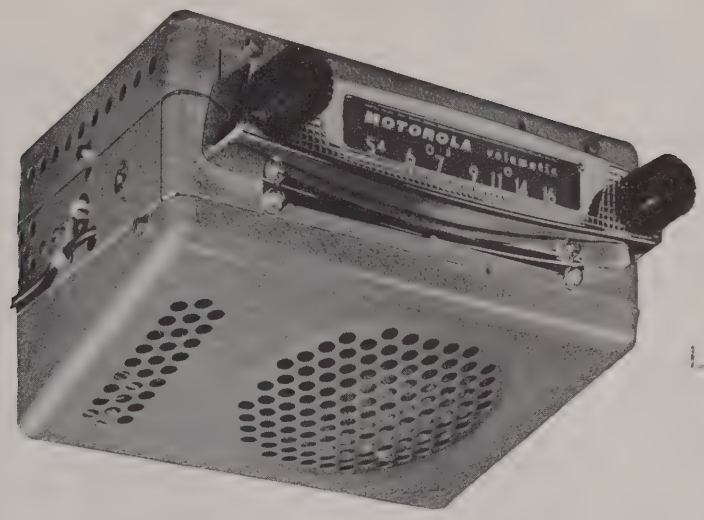
RF TUNER-RIGHT SIDE



		TEST SOCKET		
PIN 1	TP-7*	AGC	0V	A
PIN 2	TP-8	HORIZ OSC	265V	
PIN 3	TP-9*	GROUND	0V	
PIN 4	TP-10	HORIZ AFC	1.2V	C
PIN 5	TP-11	VIDEO	11.6V	

*IN SOME VERSIONS THESE POINTS ARE REVERSED

CABINET REAR VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MOTOROLA
MODEL 397

TRADE NAME	Motorola Model 397
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Universal Type AM Automobile Receiver
TUBES (Six)	Types 6BD6 RF Amplifier, 6BE6 Converter, 6BD6 IF Amplifier, 6CR6 Det.-AVC-AF Amp., 6AQ5 Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery
RATING	5.4 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540KC - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~ Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2	Fig. 1	Thru dummy to Antenna receptacle	1610KC	"	"	A5, A6, A7	"
	Steps 3 & 4 are not necessary unless tuner has been tampered with or associated components have been replaced. Before proceeding, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Alignment tool similar to Fig. 2 may be used.						
3	Fig. 1	Thru dummy to Antenna receptacle	1610KC	High frequency end stop	Across voice coil	A5, A6, A7	Adjust for maximum output.
4	"	"	1400KC	Adjust carriage 13/64" from high frequency end stop	"	A8, A9, A10	Adjust for maximum output. Repeat steps 3 & 4.
5	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum volume.						

DIAL POINTER ADJUSTMENT

If necessary, set tuner to low end of dial, adjust dial pointer so that the left edge of carriage lines up with calibration mark on top of dial backplate.

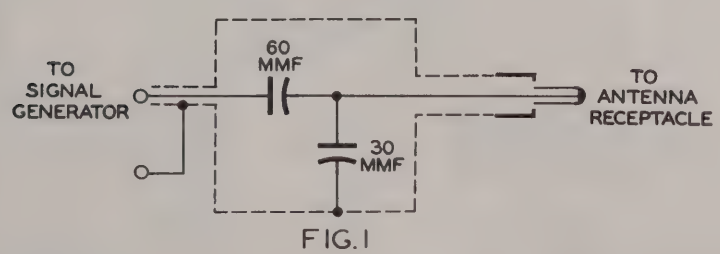


FIG. 1

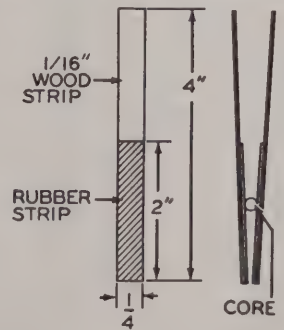


FIG. 2

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 397

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BD6	
V2	Converter	6BE6	
V3	IF Amplifier	6BD6	
V4	Det. -AVC-AF Amp.	6CR6	
V5	Output	6AQ5	
V6	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■15	350	23A485677	AFH3-104	CO770	FP328	TMT-89	T-455	R2274 *
B	▲10	350							
C	20	25							

* Non catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	90		21A591682							
C3	50-280		20K536723							
C4	150		21R410112	BPD-00015	DD-151	L10T15	ED-150	UC-5315	5GA-T15	
C5	.05	200	8R121005	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C6	20-180		20A481526							
C7	4.7		21R115955	NPO-SI 4.7	TCZ-4R7	CTAV47C	TCO-4.7	ZT-5547	5TCCB-V47	
C8	47		21R115593	N750-SI 47	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47	N750
C9	395-470		20A485708							
C10	.05	400	8R121567	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C11	10000		21B482726	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C12	.05	400	8R121567	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C13	.01	400	8R121002	BPD-01	DD-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C14	470		21R114554	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C15	.004	600	8R121000	BPD-004	D6-402	CUB6D4	ED-004	GEM-624	6TM-D4	
C16A	300		21A522033	SI 300	DD-301	L10T3	ED-300	UC-533	5GA-T3	
B	300			SI 300	DD-301	L10T3	ED-300	UC-533	5GA-T3	
C17	.02	1000	8R121004	P1088N-02		CUB10S2		GEM-1012	10TM-D4	
C18	.5	100	8K121666	P288N-5		CUB2P5		GEM-205	2TM-P5	
C19	.5	100	8K121666	P288N-5		CUB2P5		GEM-205	2TM-P5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	1/2	18B531560	B-50	A47-250K-S	Q11-130	U46	Volume
B	Shaft			Not req.	RS-3	Not req.	Not req.	
C	Switch			KB-1	SWE-13	76-1	US-26	

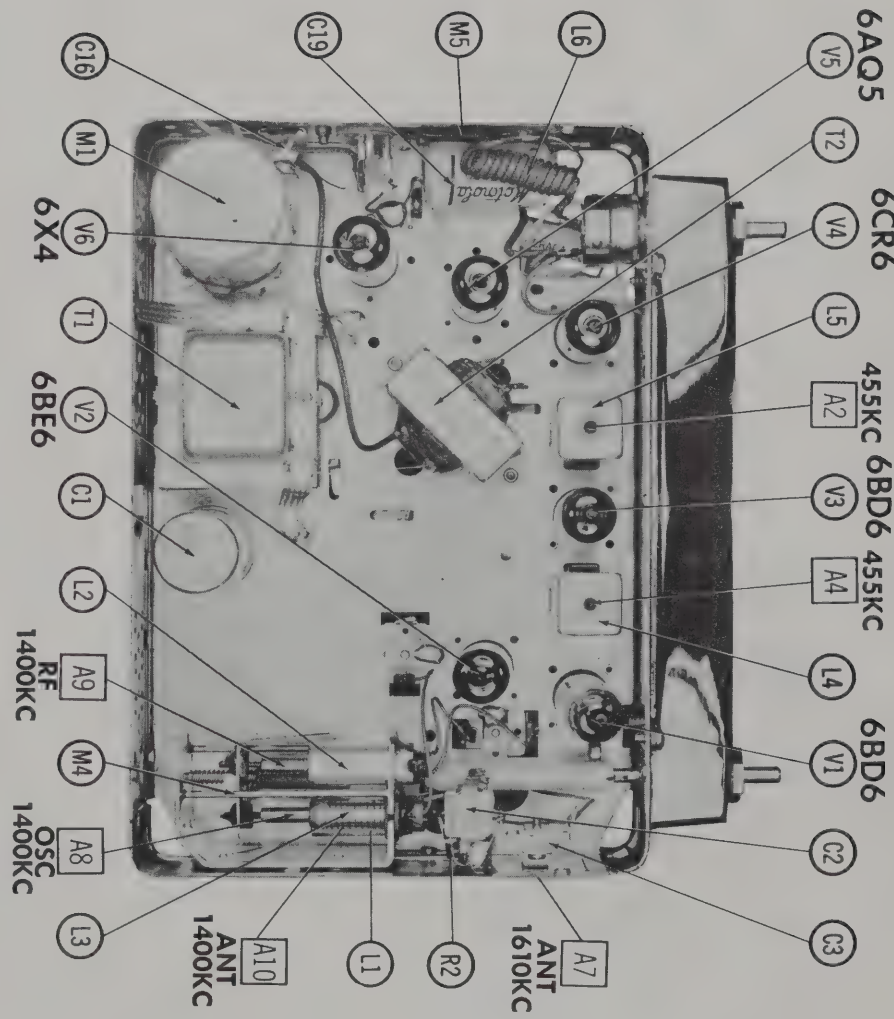
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	100K		6R6075	BTS-100K	
R3	1Meg		6R6004	BTS-1Meg	
R4	270Ω		6R6432	BTS-270	
R5	100K		6R6075	BTS-100K	
R6	47K		6R6056	BTS-47K	
R7	390Ω		6R5554	BTS-390	
R8	3.3Meg		6R2118	BTS-3.3Meg	
R9	2.2Meg		6R3927	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R10	220K		6R6015	BTS-220K	
R11	1Meg		6R6004	BTS-1Meg	
R12	270K		6R6414	BTS-270K	
R13	270Ω		6R6432	BTS-270	
R14	2200Ω	2	6R476130	BTB-2200	
R15	10K	2	6R6299	BTB-10K	
R16	56Ω	1	6R2037	BTA-56	
R17	56Ω	1	6R2037	BTA-56	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	6.3VCT @ 3.2A	440VCT @ .042A			25C501303				22R63	V-21B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω	3-4Ω	25B70171	Z1107	A-2930	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3-4Ω	50C534259	52A1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Antenna Coil	24B537760				Note 1
	Antenna Coil	24B537770				Note 2
L2	RF Coil	24B502473				Note 1
	RF Coil	24K536586				Note 2
L3	Osc. Coil	24B502474				Note 1
	Osc. Coil	24K536595				Note 2
L4	Input IF	24K533461	16-6758	BC-352	12-C1	
L5	Output IF	24B533460	16-6770	BC-355	12-C6	
L6	"A" Lead Choke	24K580706				1.2 Microhenries
L7	Hash Choke	24A538914				10.3 Microhenries

Note 1. Part of tuner assembly (M4) Part #77D537759 or 77D537758
Note 2. Part of tuner assembly (M4) Part #77K537768

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115v	48B3333	5342	903M	5342	

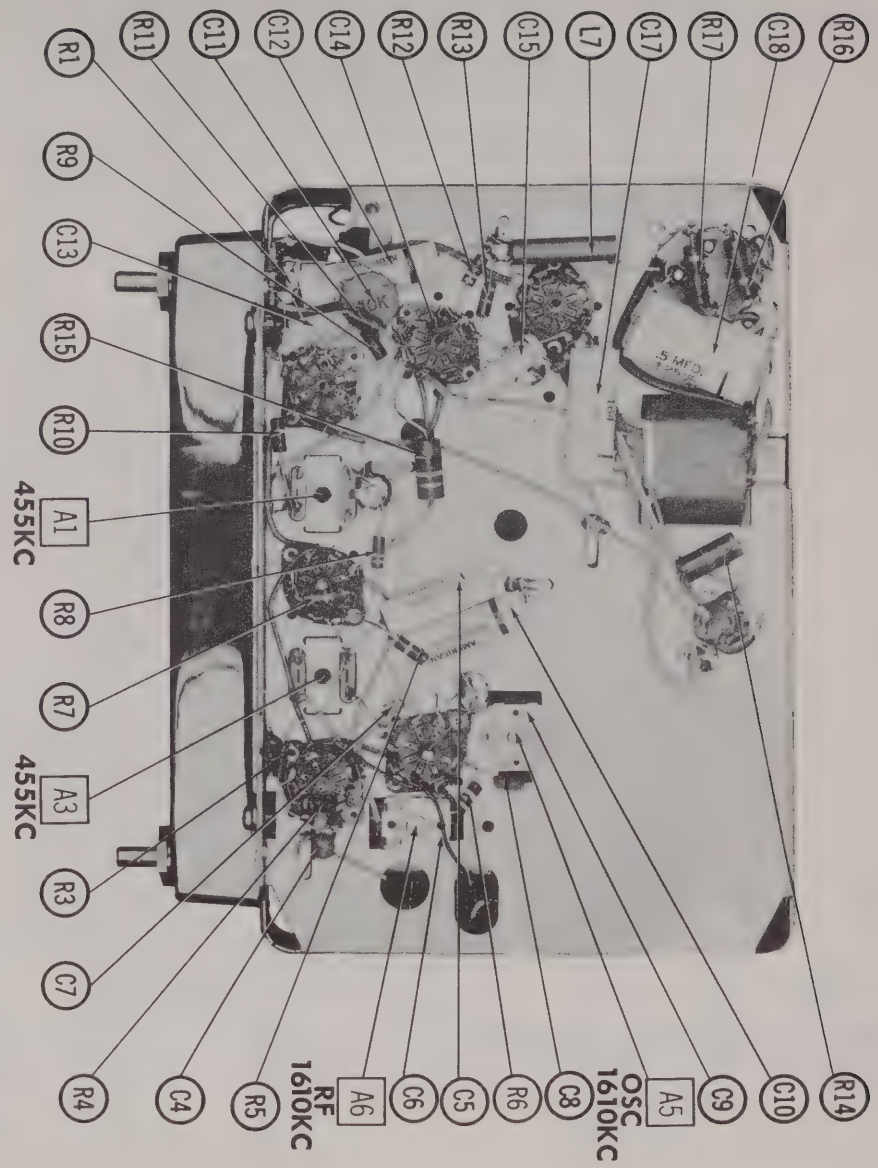
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	9A	65R16248	9K536617	307009. (SFE 9A)	155009	SFE9	HRH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Dial Light	65R10867	#44
M4	Tuner	77D537759	(MT-186)
	Tuner	77D537758	(MT-185)
	Tuner	77K537768	(MT-187)
M5	Spark Plate	64K532087	

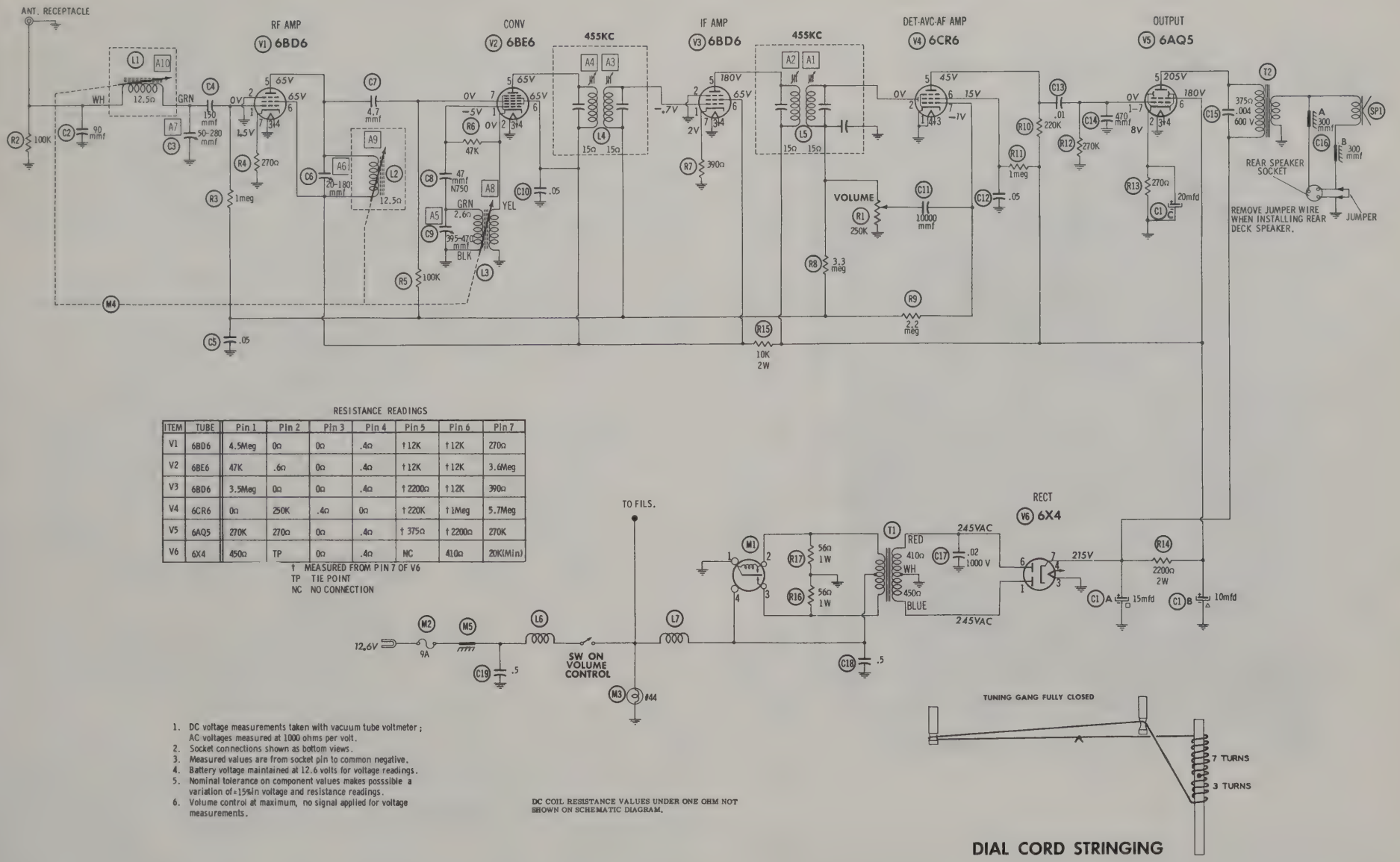
CHASSIS—BOTTOM VIEW



SET 371 FOLDER 6

MOTOROLA MODEL 397

MOTOROLA MODEL 397



DIAL CORD STRINGING

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BD6	4.5Meg	0Ω	0Ω	.4Ω	†12K	†12K	270Ω
V2	6BE6	47K	.6Ω	0Ω	.4Ω	†12K	†12K	3.6Meg
V3	6BD6	3.5Meg	0Ω	0Ω	.4Ω	†2200Ω	†12K	390Ω
V4	6CR6	0Ω	250K	.4Ω	0Ω	†220K	†1Meg	5.7Meg
V5	6AQ5	270K	270Ω	0Ω	.4Ω	†375Ω	†2200Ω	270K
V6	6X4	450Ω	TP	0Ω	.4Ω	NC	410Ω	20K(Min)

† MEASURED FROM PIN 7 OF V6
TP TIE POINT
NC NO CONNECTION

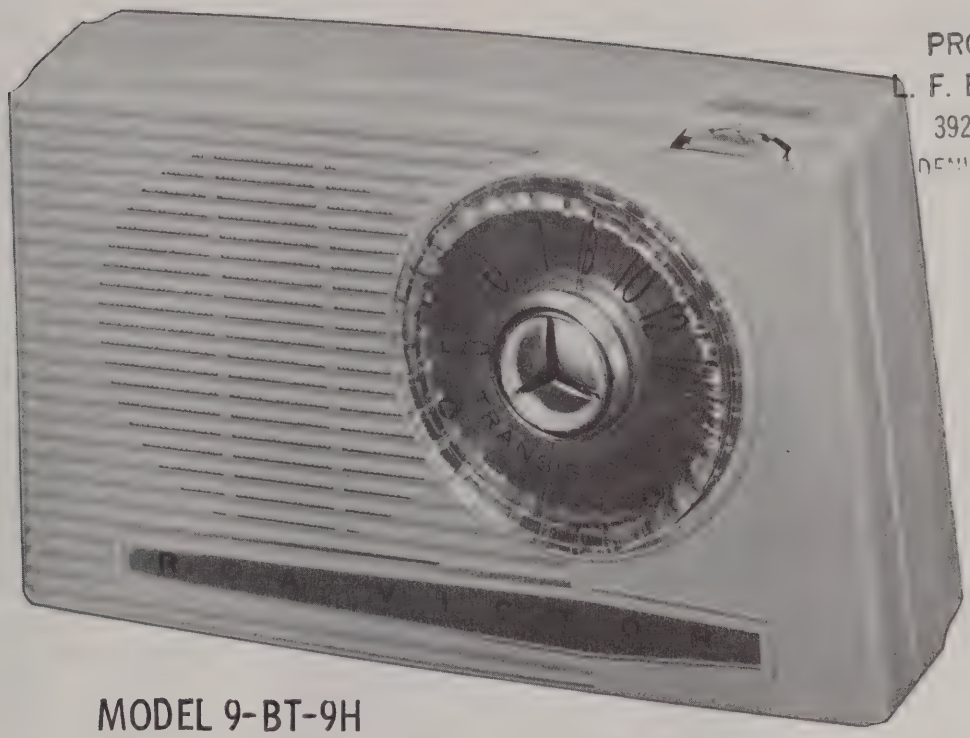
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

RCA VICTOR
MODELS 9-BT-9E, H, J (Ch. RC-1164A)



MODEL 9-BT-9H

RCA VICTOR
MODELS 9-BT-9E, H, J (Ch. RC-1164A)

TRADE NAME	RCA Victor Models 9-BT-9E, 9-BT-9H, 9-BT-9J (Ch. RC-1164A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC
RATING	7.5MA@ 9 Volts DC
TUNING RANGE—BROADCAST	540KC - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

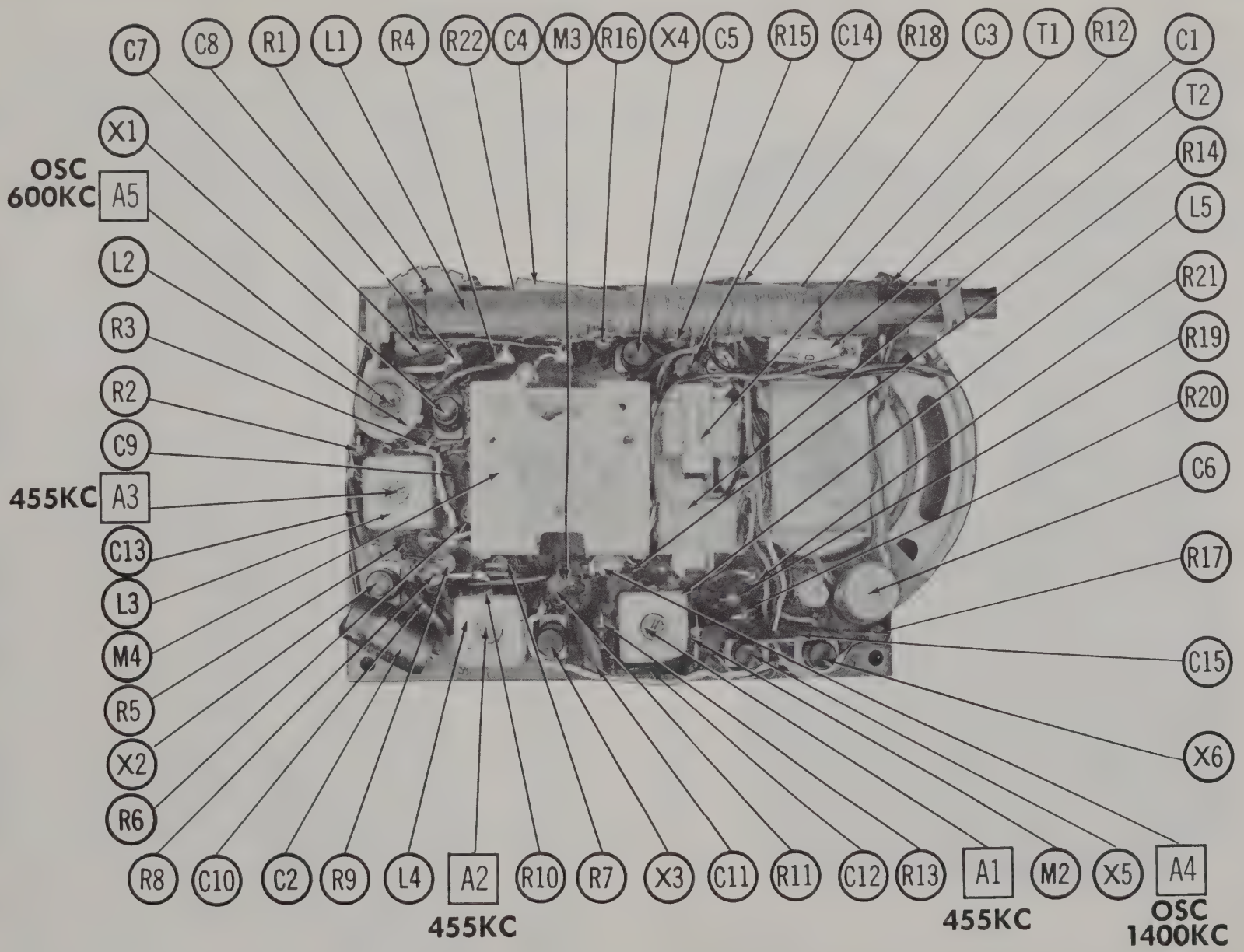
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1		High side to terminal #2 on Loop Stick (L1). Low side to common positive.	455KC (400~ Mod.)	Quiet point near 1600KC	Across voice coil	A1, A2, A3	Adjust for maximum output. Repeat step 1.
2		Loop	1400KC	Tune to 1400KC signal	"	A4	Adjust for maximum output while rocking tuning gang.
3		"	600KC	600KC	"	A5	Adjust for maximum output while rocking tuning gang. Repeat steps 2 & 3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H31

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			CBS PART No.	SYLVANIA PART No.	
X1	2N140	Converter			
X2	2N139	1st. IF Amplifier			
X3	2N139	2nd. IF Amplifier			
X4	2N109	Driver			
X5	2N109	Output			
X6	2N109	Output			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	10	10	101613	XPP10V10	NL10-10	TT12X10	ML10-15		TE-1114
C2	45	10	101793	XPP10V50	NL50-10	TT10X50			R2417 *
C3	10	10	101613	XPP10V10	NL10-10	TT12X10	ML10-15		TE-1114
C4	10	10	101613	XPP10V10	NL10-10	TT12X10	ML10-15		TE-1114
C5	25	10	101614	XPP10V25	NL25-10	TT10X25	ML30-15		TE-1118
C6	100	10	103015	PWE10V100	NL100-10				R2418 *

* Non catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	100000		101610							
C8	30000		101698							
C9	100000		103014							
C10	100000		103014							
C11	100000		103014							
C12	30000		101698							
C13	100000		103014							
C14	5000		101742							
C15	50000		103380	BPD-05	DF-503				5HK-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2000Ω	1/4	101616					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R2	470Ω		502147	BTS-470	
R3	100K	1/10	103022	BTR-100K	
R4	560Ω 5%		502156	BTS-560 5%	
R5	100Ω 5%		502110	BTS-100 5%	
R6	1000Ω 5%		502210	BTS-1000 5%	
R7	220Ω		502122	BTS-220	
R8	1000Ω 5%		502210	BTS-1000 5%	Note 1
R9	3300Ω 5%		502233	BTS-3300 5%	
R10	15K		502315	BTS-15K	
R11	15K		502315	BTS-15K	
R12	3300Ω		502233	BTS-3300	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R13	470Ω		502147	BTS-470	
R14	3900Ω		502239	BTS-3900	
R15	6800Ω		502268	BTS-6800	
R16	33K		502333	BTS-33K	
R17	82K		502382	BTS-82K	
R18	1000Ω		502210	BTS-1000 5%	Note 2
R19	270Ω	3/4	103021		Note 3
R20	390Ω 5%		502139	BTS-390 5%	
R21	11K 5%		502311	BTS-11K 5%	
R22	100Ω		502110	BTS-100 5%	Note 2

Note 1. Some versions may use a 220Ω 1/2W
Note 2. Manufacturer recommends 5% replacement
Note 3. Special temperature compensation type

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	Turns Ratio		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5:	1	101618	GH110			TR-3 ①		① Tape center tap on primary winding

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1500Ω CT	14Ω	101619						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	2 3/4	PM	14Ω	103123		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	103016		BC-419		
L2	Osc. Coil	103017				
L3	1st. IF	103018	16-9012	BC-324		
L4	2nd. IF	103019	16-9013	BC-325		
L5	3rd. IF	103020	16-9014	BC-326		

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	VS-300		P6		266		M-1600		1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		RCA VICTOR PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N60	101615	1N60	1N60	Audio Det.
M3	1N60	101615	1N60	1N60	Limiter

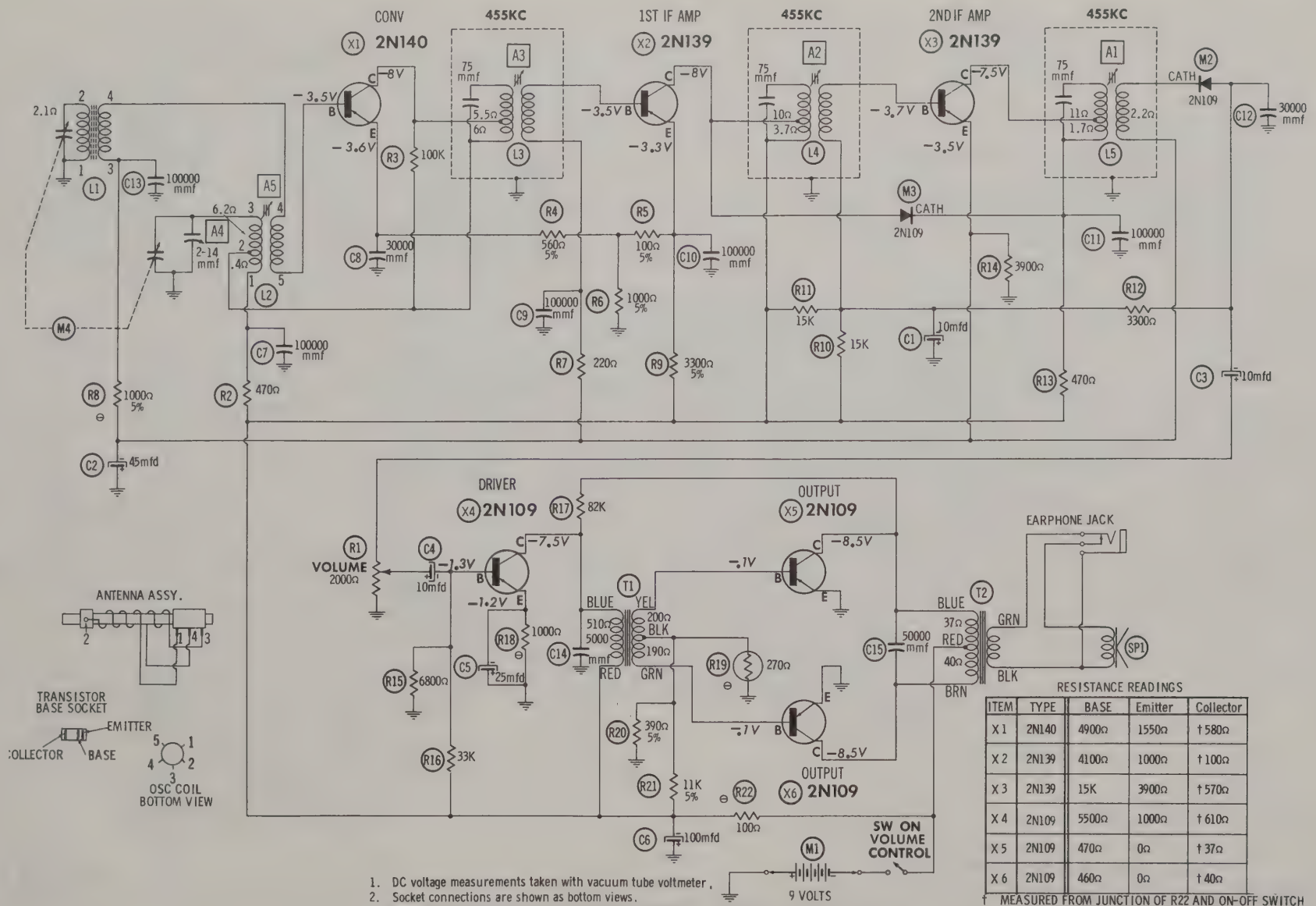
MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuning Cap.	101617	2 Gang (Ant. 8-82MMF, Osc. 6.2-59MMF)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Printed Panel	1-616196	
Dial	103665	Tuning
Knob	101637	Volume
Knob	103644	Tuning
Cabinet	Y4098	White-Model 9-BT-9E
Cabinet	Y4097	Grey-Model 9-BT-9J
Cabinet	Y4099	Green-Model 9-BT-9H



ITEM	TYPE	BASE	Emitter	Collector
X1	2N140	4900Ω	1550Ω	†580Ω
X2	2N139	4100Ω	1000Ω	†100Ω
X3	2N139	15K	3900Ω	†570Ω
X4	2N109	5500Ω	1000Ω	†610Ω
X5	2N109	470Ω	0Ω	†37Ω
X6	2N109	460Ω	0Ω	†40Ω

RESISTANCE READINGS

† MEASURED FROM JUNCTION OF R22 AND ON-OFF SWITCH

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

PHOTOFACT* Folder

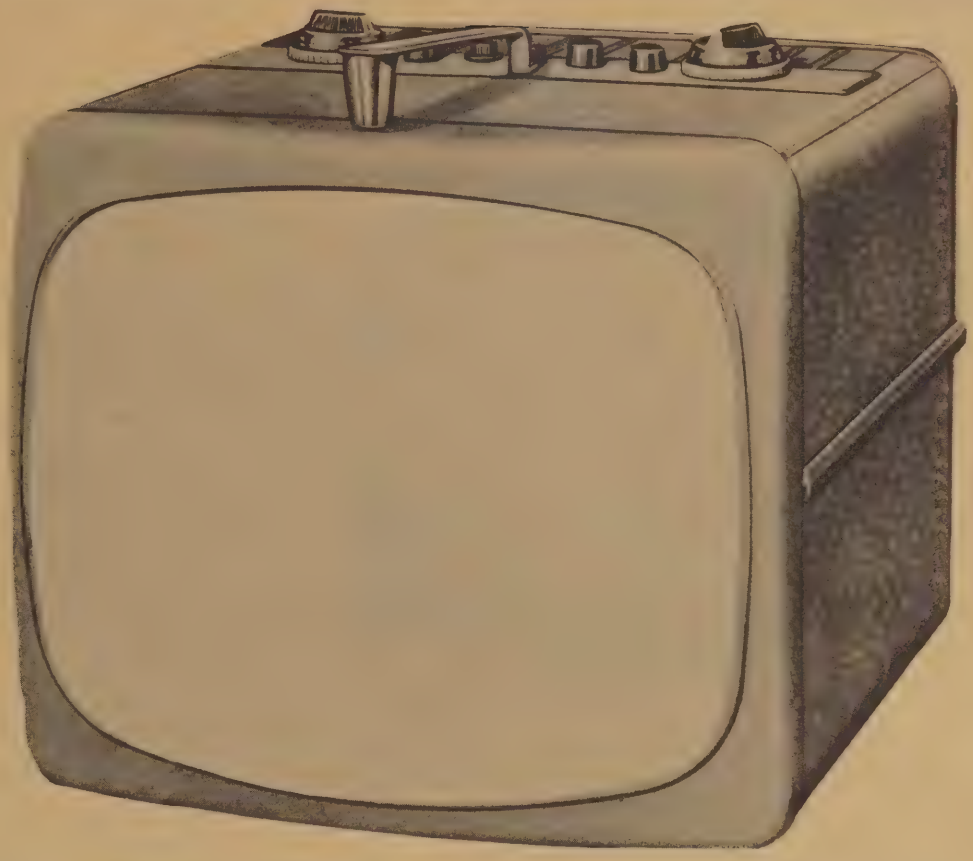
*TRADE MARK

SENTINEL CHASSIS U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . unless it has been purchased as part of a complete volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



SENTINEL CHASSIS U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series)

TRADE NAME	Sentinel Chassis U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series)
MANUFACTURER	Sentinel Radio Co., Fort Wayne 4, Indiana
TYPE SET	Television
TUBES	Fifteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 120 Watts, 1.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 14
Parts List and Descriptions 12, 13
Photographs
- Cabinet-Rear View 14
- Capacitor Identification 4
- Chassis-Top View 11
- RF Tuner 5, 8

Photographs (Con't)
- Resistor Identification 9
- Trans., Inductor & Alignment Identification 7

Resistance Measurements 10
Servicing in the Field 1
Schematic (Alternate Tuner) 5
Schematic (TV) 2
Tube Failure Check Chart 3
Tube Placement Chart 3

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

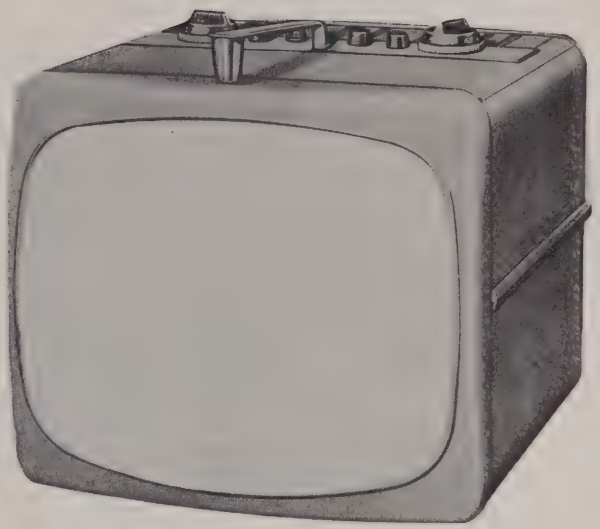
"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."

"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove the 2 side trim strips by sliding off toward the back.
2. Remove 6 metal screws and the rear cover.
3. Remove the bolt holding the handle at the front, the metal screw in the center of the handle and the handle.
4. Remove 7 push-on type control knobs from the top.
5. Remove speaker leads, picture tube socket, ion trap, yoke clamp, yoke and HV lead.
6. Remove 4 metal screws and remove the cabinet top.
7. Remove 4 chassis bolts from the bottom and remove the chassis.
8. Remove 4 speaker nuts and the speaker.



CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physically contacting chassis.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF oscillator it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube and safety glass cleaning, see steps 1, 2 and 3 of "Disassembly Instructions". Remove 1 metal screw from the bottom of the front and remove the entire front of cabinet.

FOCUS

The focus may be varied by the position of a wire from pin 6 of the picture tube to pin 36 or 38 on the printed board. Adjust Ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. For location, see tube placement chart.

FUSES

A 5Ω fusible resistor R73 is used for LV power supply protection. (For location see tube placement chart).

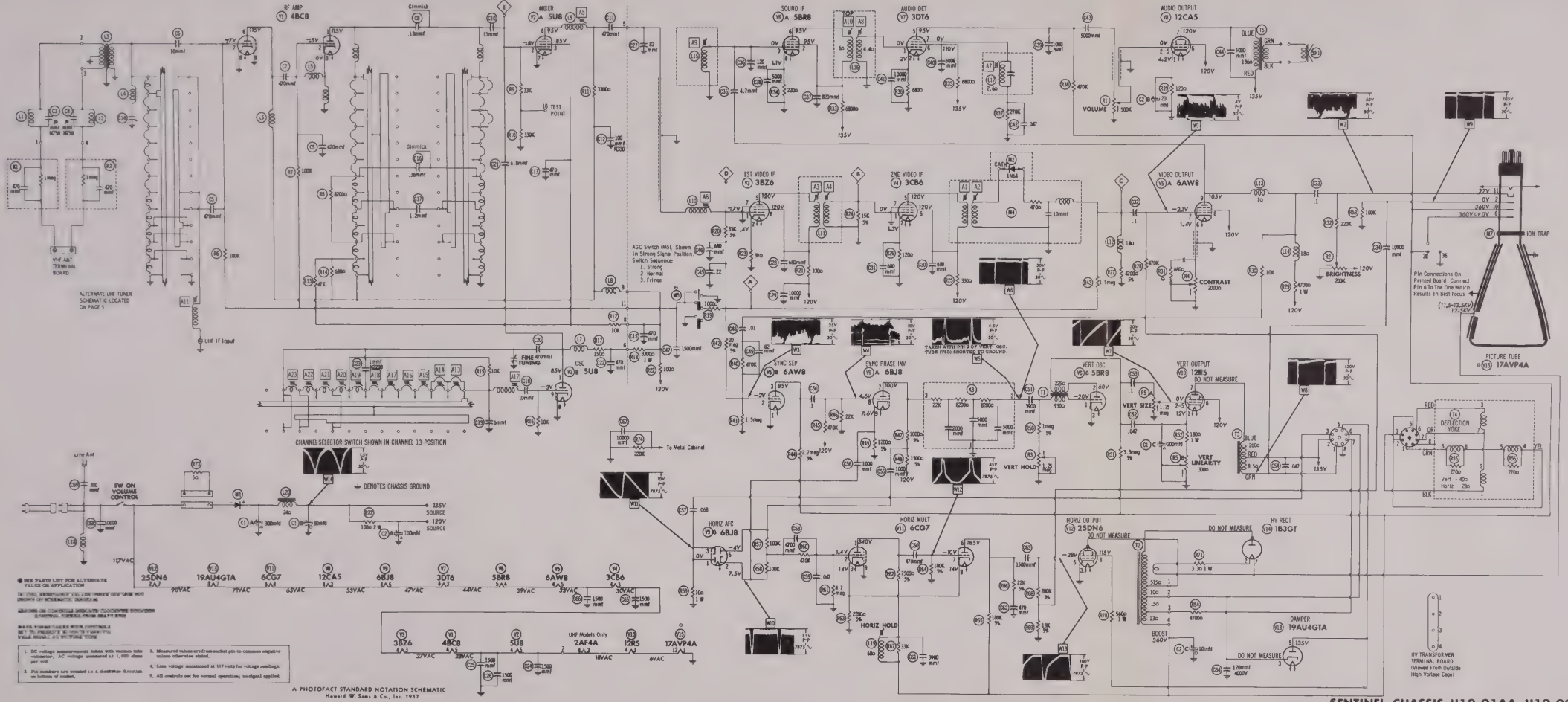
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

SENTINEL CHASSIS U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series)

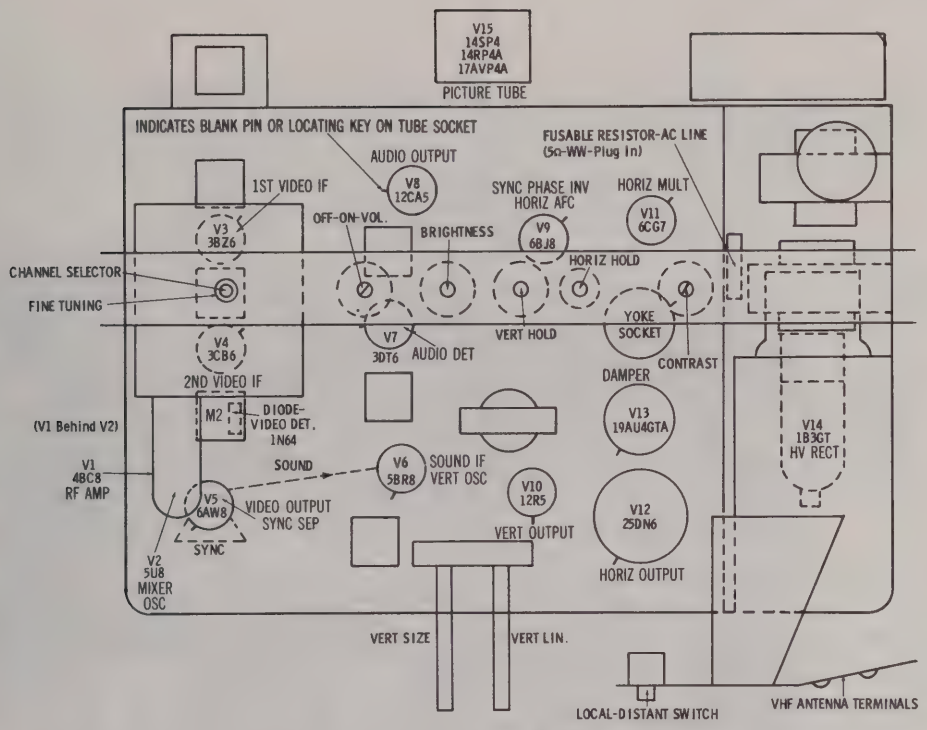
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


SENTINEL CHASSIS U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957
RF AMP V1 4BC8
MIXER V2 A 5U8
SOUND IF V6 A 5BR8
AUDIO DET V7 3DT6
AUDIO OUTPUT V8 12CA5
1ST VIDEO IF V3 3BZ6
2ND VIDEO IF V4 3CB6
VIDEO OUTPUT V5 A 6AW8
SYNC SEP V6 B 6AW8
SYNC PHASE INV V9 A 6BJ8
VERT OSC V6 B 5BR8
VERT OUTPUT V10 12BS
HORIZ AFC V5 B 6BJ8
HORIZ MULT V11 6CG7
HORIZ OUTPUT V12 25DN6
HV RECT V14 1B3GT
DAMPER V13 19AU4GTA
PICTURE TUBE V16 17AVP4A
OSC 5U8
VOLUME
CONTRAST
BRIGHTNESS
VERT HOLD
HORIZ HOLD
VERT SIZE
VERT LINEARITY
BOOST
ION TRAP
DEFLECTION YOKE
VHF ANT TERMINAL BOARD
ALTERNATE UHF TUNER SCHEMATIC LOCATED ON PAGE 5
UHF IF Input
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
FINE TUNING
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
To Metal Cabinet
135V SOURCE
120V SOURCE
117VAC
DO NOT MEASURE
AGC Switch (MS). Shown In Strong Signal Position. Switch Sequence: 1. Strong 2. Normal 3. Fringe
TAKEN WITH PIN 2 OF VERT. OSC. TUBE (V6B) SHORTED TO GROUND
Pin Connections On Printed Board Connect Pin 6 To The One Which Results In Best Focus
HV TRANSFORMER TERMINAL BOARD (Viewed From Outside High Voltage Cap)
UHF Models Only
25DN6 19AU4GTA 6CG7 12CA5 6BJ8 3DT6 5BR8 6AW8 3CB6
3BZ6 4BC8 5U8 2AF4A 12R5 17AVP4A
90VAC 71VAC 65VAC 53VAC 47VAC 44VAC 39VAC 33VAC 30VAC
27VAC 25VAC 18VAC 6VAC
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE S.
DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

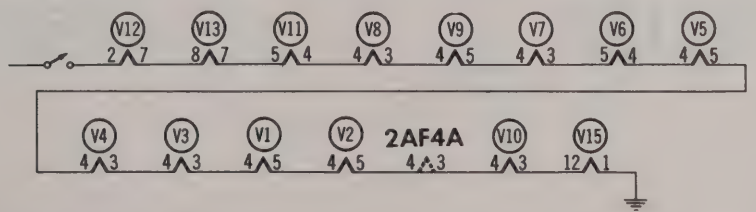
POWER SUPPLY FAILURE
No raster, no sound - Fusible Resistor (R73), Rectifier (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, Diode (M2), V5
No pic, no sound, has snow - V1, V2
No pic, has sound, has raster - V5, V15
Has pic, no sound - V6, V7, V8

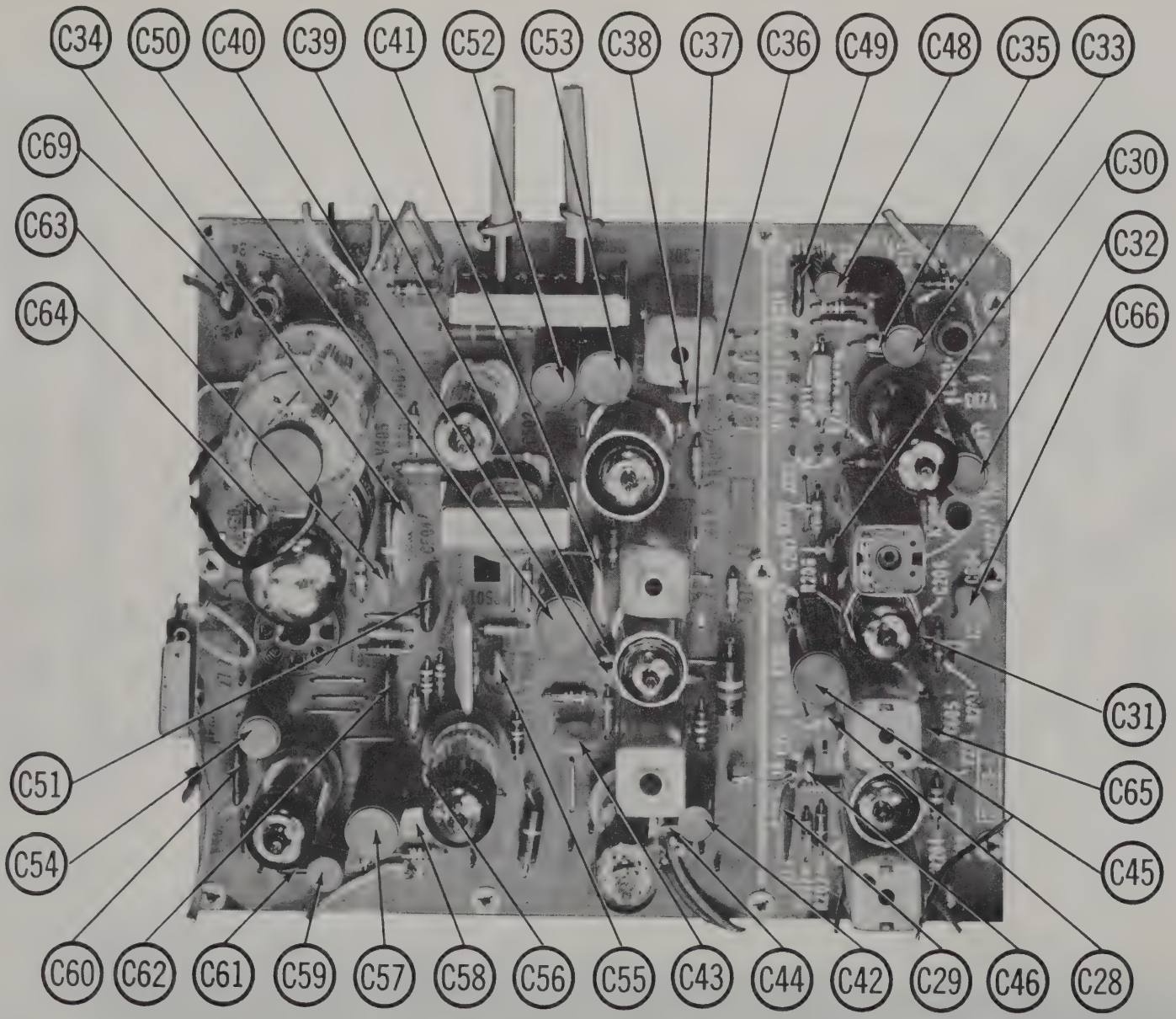
SYNC FAILURE
No vert. sync - V5, V9
No horiz. sync - V5, V9
No vert. or horiz. sync - V5, V9

SWEEP FAILURE
No raster, has sound - V9, V11, V12, V13, V14, V15
No vertical deflection - V6, V10
Poor vert. linearity or foldover - V6, V10
Poor horiz. linearity or foldover - V11, V12, V13
Narrow picture - V11, V12, V13, M1
Vert. off freq. - V6
Horiz. off freq. - V11

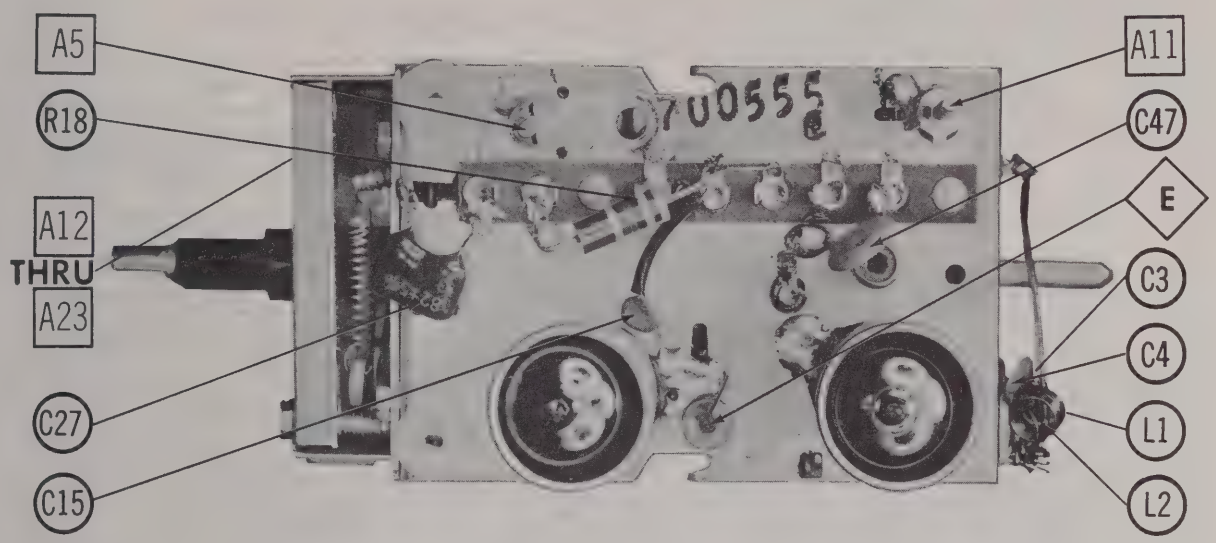
This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative (See circuit below).



SENTINEL CHASSIS U19-01AA, U19-02AA, V19-01AA, V19-02AA (19 Series)

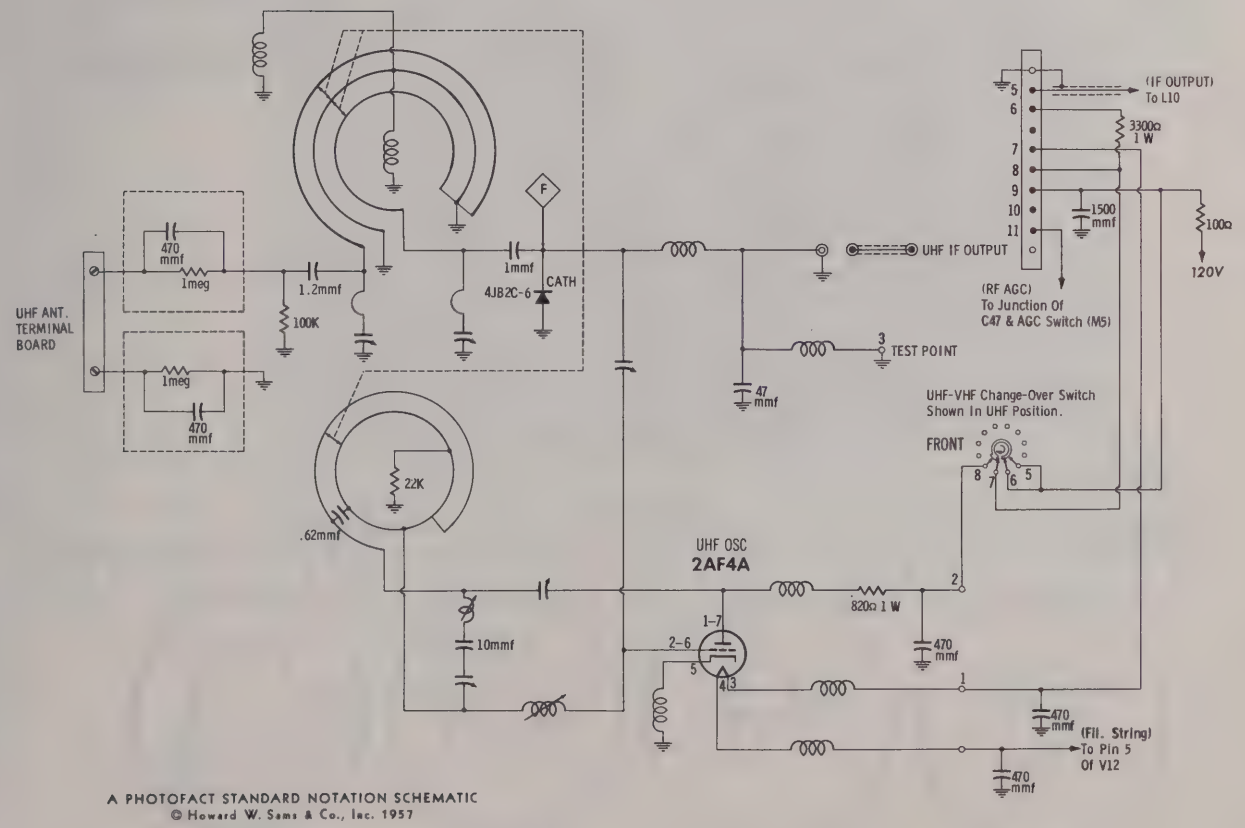


CAPACITOR IDENTIFICATION



RF TUNER - TOP VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1957

ALTERNATE UHF TUNER SCHEMATIC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Set "Local-Distant" switch to "Local" position.
Set contrast control fully counter clockwise.
Connect the negative lead of a 3 volts bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point Ⓑ. Low side to chassis.	43MC (10MC Swp)	42.75MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓒ. Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 1 with markers as indicated. Adjust A1 for maximum gain between markers. Adjust A2 for proper bandwidth.
2.	"	High side to point Ⓓ. Low side to chassis.	"	"	"	"	A3, A4	Adjust input to provide 3 volts peak to peak. Adjust for response similar to Fig. 2 with markers as indicated.
3.	"	High side to point Ⓔ. Low side to chassis.	"	42.75MC 45.0MC 45.75MC	12	"	A5, A6	Adjust A5 for maximum gain while placing 45.75MC marker at 50% on curve as in Fig. 3. Adjust A6 for maximum gain and symmetry with markers as indicated in Fig. 3. If necessary, retouch A1 thru A4 for desired response.

UHF IF ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	1000Ω Carbon Resistor	High side to point Ⓕ. Low side to tuner chassis.	43MC (10MC Swp)	42.75MC 45.0MC 45.75MC	UHF	Vert. Amp. thru 10K to point Ⓒ. Low side to chassis.	All	Adjust for maximum gain and MINIMUM tilt.

SOUND IF ALIGNMENT

1. Tune in a strong TV signal and adjust A7 for maximum sound output with MINIMUM distortion.
2. Reduce the signal strength,by using an attenuation pad,so that with the volume control set fully clockwise, the sound is just audible. Adjust A8 for MINIMUM noise and clearest sound. (If no attenuator is available, disconnect antenna and place leads in vicinity of antenna terminals.
3. Using same weak signal, adjust A9 and A10 for MINIMUM noise and clearest sound.
4. Reduce the signal further until noise is present and retouch A10 for MINIMUM noise and clearest sound.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓒ. Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

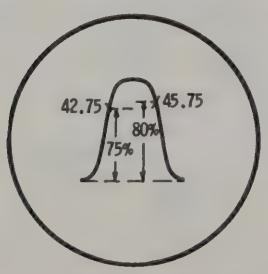


FIG. 1

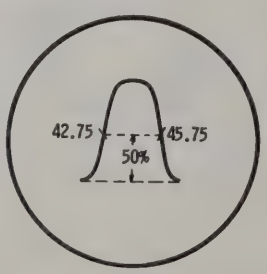


FIG. 2

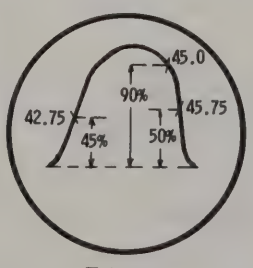


FIG. 3

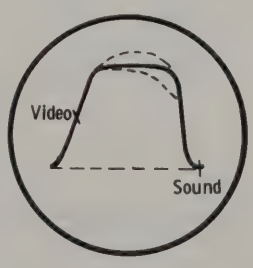
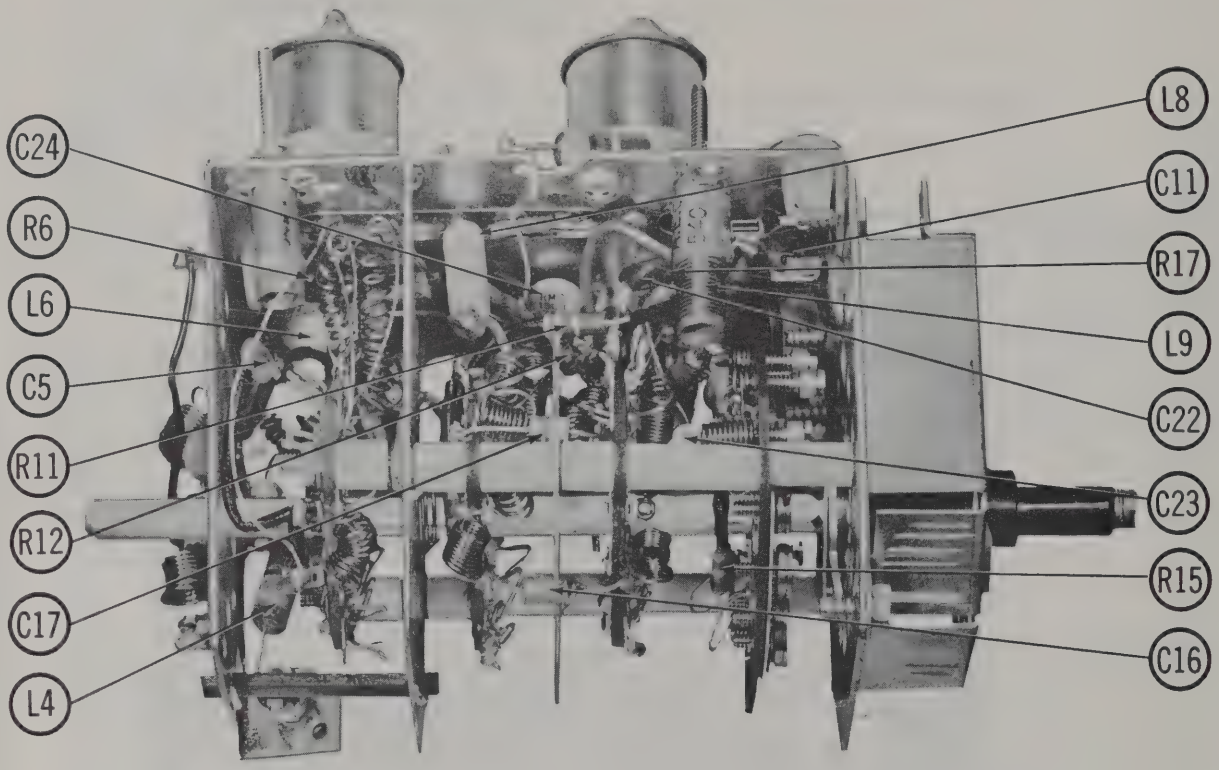


FIG. 4

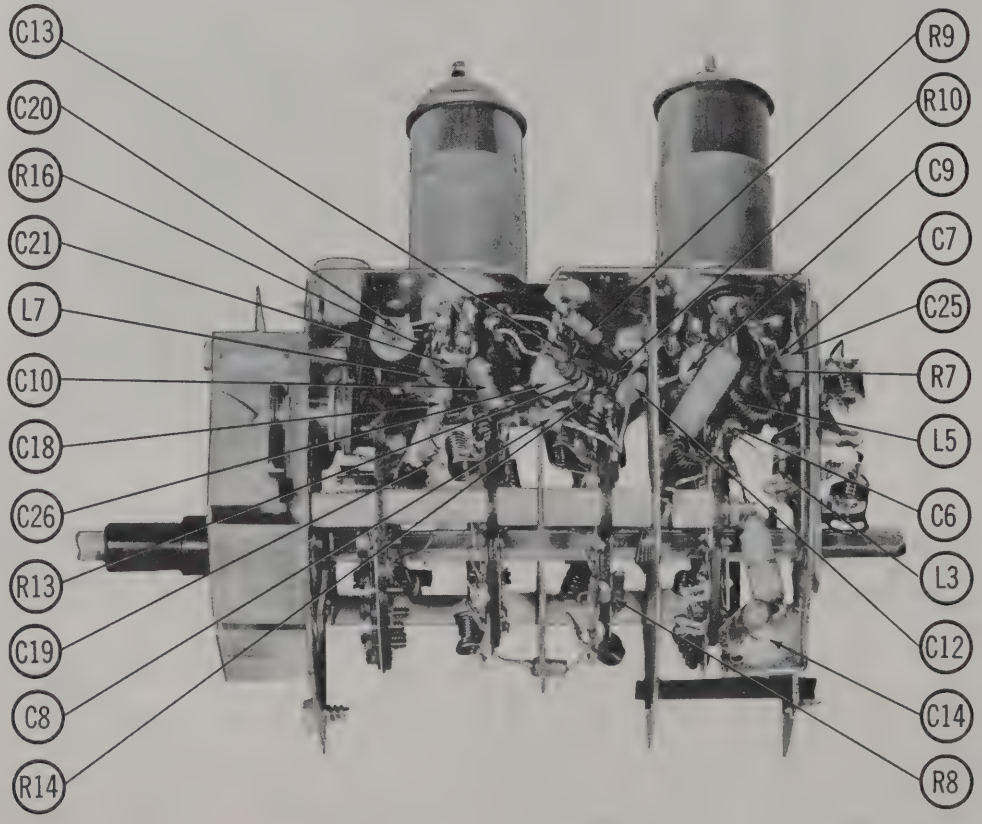
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

SENTINEL CHASSIS U19-01AA, U19-02AA,
V19-01AA, V19-02AA (19 Series)



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

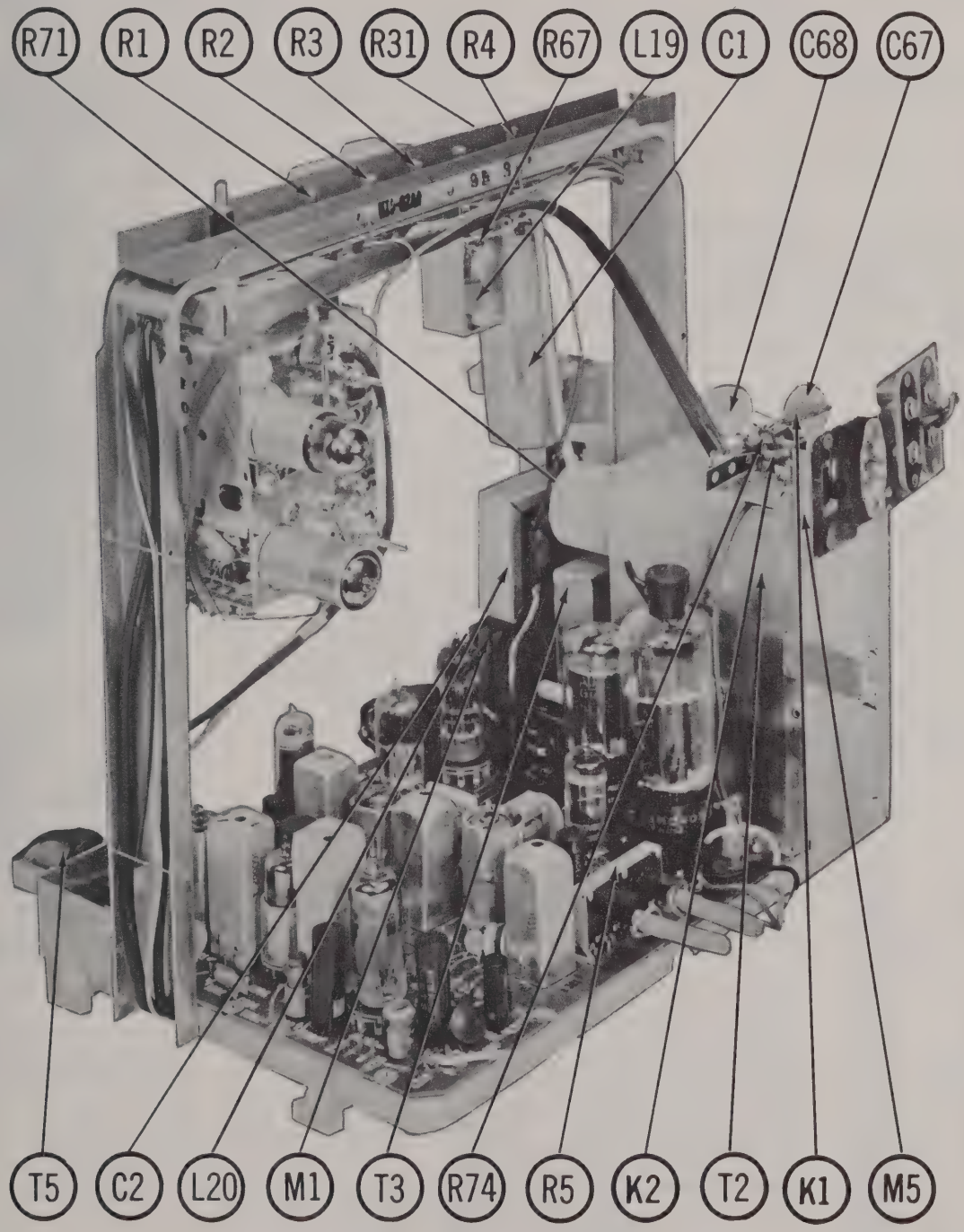
RESISTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BC8	†225Ω	1.6Meg	2.5Ω	6Ω	5.5Ω	†225Ω	1.6Meg	0Ω	0Ω
V2	5U8	†3600Ω	360K	†9K	5.5Ω	4Ω	†3500Ω	0Ω	0Ω	10K
V3	3BZ6	1.5Meg	39Ω	6Ω	7Ω	†450Ω	†450Ω	0Ω		
V4	6CB6	.1Ω	120Ω	7Ω	7.5Ω	†450Ω	†450Ω	0Ω		
V5	6AW8	0Ω	1.5Meg	‡2.7Meg	9Ω	7.5Ω	•15Ω	470K	†125Ω	†4800Ω
V6	5BR8	•1.5Meg	‡3.3Meg	0Ω	9Ω	10Ω	†6800Ω	†6800Ω	220Ω	.6Ω
V7	3DT6	4.4Ω	680Ω	10Ω	11Ω	‡470K	†6800Ω	270K		
V8	12CA5	120Ω	50K	12.5Ω	15Ω	50K	†125Ω	†210Ω		
V9	6BJ8	10Ω	5.3Meg	10Ω	12.5Ω	11Ω	5.3Meg	†2600Ω	18K	1200Ω
V10	12R5	•350Ω	•700K	1.5Ω	4Ω	•700K	†125Ω	†280Ω		
V11	6CG7	‡7500Ω	4.7Meg	2200Ω	15Ω	16.5Ω	‡180K	100K	2200Ω	0Ω
V12	25DN6	TP	25Ω	0Ω	NC	220K	NC	20Ω	†585Ω	TOP CAP ‡10Ω
V13	19AU4GTA	NC	NC	¶	NC	†25Ω	NC	16.5Ω	20Ω	
V14	1B3GT	PINS		1 THRU 8	HAVE	INF	RESISTANCE			TOP CAP ‡525Ω
V15	17AVP4A	0Ω	100K	PIN 6 ‡26Ω	PIN 10 ‡26Ω	PIN 11 240K	PIN 12 1.5Ω			

TP TIE POINT
NC NO CONNECTION
† MEASURED FROM OUTPUT OF M1
‡ MEASURED FROM PIN 3 OF V13
• THIS READING WILL VARY: CONTROL SET FOR NORMAL OPERATION.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	4BC8	
V2	Mixer-Oscillator	5U8	
V3	1st Video IF Amp	3GJ6	
V4	2nd Video IF Amp	3GJ6	
V5	Vide o Output-Sync. Sep	6AW8	
V6	Sound IF Amp - Ver. Det	5BK8	
V7	Audio Det	7DT6	
V8	Audio Output	12CA5	

ITEM No.	USE	TYPE	NOTES
V9	Sync Phase Inverter - Horiz. AFC	6BJ8	
V10	Vert. Output	12B5	
V11	Horiz. Mult.	6CG7	
V12	Horiz. Output	25DN6	
V13	Damper	1BAU4GTA	
V14	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SENTINEL PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V15	17AVP4A	17AVP4A ②	17AVP4A ② 17AVP4	17AVP4A ① 17AVP4 17ATP4A 17AVP4A1	① Silver screen 86 ② Aluminized
	14GP4 14RP4A		14RP4A ③	14GP4 14RP4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA SENTINEL PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1A	400	150	270021-63	AF153-83-95		FPAU 8			R2370 *	
B	80	150				TC492				
C	400	50								
C1A	400	150	270035-35	AF83-488	C1480	WQVT8	TMT-151	T-770	TVL-3903	
B	20	50				TC48				
C	80	450								

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	39		260175-30	NT50-S1 39	TCN-39	C10Q2S0	TCT-39			NT50
C4	39		260175-30	NT50-S1 39	TCN-39	C10Q2S0	TCT-39			NT50
C5	470		260175-8	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C6	10		260216-127	NPO-S1 10	L10Q1		ED-10	UC-541	5GA-Q1	
C7	470		260175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C8	18		260216-4							
C9	470		260175-8	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C10	15		260307-5	NPO-S1 15	TCZ-15	L10Q15	ED-15	UC-5415	5GA-Q15	
C11	470		260175-8	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C13	100		260175-24		TCA-100					N330
C14	470		260175-8	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C15			260216-6							
C16	470		260175-8	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	Note 1
C17	1.5		260216-155	NPO-S1 1	TCZ-1					
C18	10		260216-135	S1 10	D6-100	L10Q1	ED-10	UC-541	5GA-Q1	
C19	8		260216-149							
C20	470		260216-15	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C21	6.8		260241-125	NPO-S1 6.8	TCZ-6R8	C10V8C	TCO-6.8	ZT-5588	5TCCB-V68	
C22	470		260175-8	BPD-00047	D1-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C23			260216-44							N1200
C24	1500		260175-10	BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C25	1500		260175-10	BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C26	1500		260175-10	BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C27	82		260238-328	BPD-00082	D6-820	L10Q82	ED-82	UC-5482	5GA-Q82	
C28	680		260241-136	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C29	10000		260241-66	BPD-01	DD-103	BYA8S1	GP-10000	DC5W1	5HK-S1	
C30	680		260241-138	BPD-00068	D6-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C31	680		260241-136	BPD-00068	D6-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C32	.1	200	260240-13			BC5P15		ACE401	26E-P10	
C33	.1	200	260240-13			BC5P15		ACE401	26E-P10	
C34	10000		260241-66	BPD-01	DD-103	BYA8S1	ED-01	DC5W1	5HK-S1	
C35	4.7		260241-133	NPO-S1 4.7	TCZ-4R7	C10V7C	TCO-4.7	ZT-5547	5TCCB-V47	
C36	120		260238-3	BPD-00012	D6-121	L10Y12	ED-120	UC-5312	5GA-T12	
C37	680		260241-140	BPD-00068	D6-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C38	5000		260238-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C39	1000		260238-42	BPD-001	DD-102	BYA10	ED-1000	DC52	5HK-D1	
C40	5000		260238-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C41	10000		260238-66	BPD-01	DD-103	BYA8S1	ED-01	DC5W1	5HK-S1	
C42	.047	400	260240-11			BC5S47		ACE5S47	26E-S47	
C43	5000		260238-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C44	5000		260238-1	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C45	.22	200	260240-15			BC5P22		ACE5P22	26E-P22	
C46	680		260241-138	BPD-00068	D6-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C47	1500		260215-18	BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C48	.01	300	260240-11			BC5S1		ACE5S1	45E-S1	
C49	82		260238-324	BPD-000082	D6-820	L10G82	ED-82	UC-5482	5GA-G82	
C50	.1	400	260242-13			BC5P15		ACE401	26E-P10	
C51	3900		260241-466	BPD-004	D6-402	BYA10D4	ED-004	UC-5239	5HK-D39	
C52	.047	400	260242-11			BC5S47		ACE5147	45E-S47	
C53	.1	400	260242-13			BC5P47		ACE401	45E-P10	
C54	.047	500	260244-1			BC5S47/		ACE5147	5S3-S47	
C55	1000		260238-24	BPD-001	DD-102	BYA10	ED-1000	DC52	5HK-D1	
C56	1000		260238-24	BPD-001	DD-102	BYA10	ED-1000	DC52	5HK-D1	
C57	.068	400	260242-23			BC5S68		ACE5147	45E-S68	
C58	4700		260238-348	BPD-0047	D6-472	BYA10D47	ED-0047	DC5247	5HK-D47	
C59	.047	200	260240-1			BC5S47J		ACE5147	45E-S47	
C60	470		260238-346	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C61	3900		260238-468	BPD-004	D6-402	BYA10D4	ED-004	UC-5239	5GA-D39	
C62	470		260239-346	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C63	1500		260238-146	BPD-0015	DD-152	BYA10D15	ED-0015	DC525	5HK-D15	
C64	120	4000	260235-2			DD60-121				
C65	1500		260238-146	BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C66	1500		260238-46	BPD-0015	DD-152	BYA10D15	ED-0015	DC5215	5HK-D15	
C67	10000		260241-3	BPD-03	DD-103	BYA8S1	ED-01	DC5W1	5HK-S1	
C68	10000		260241-5	BPD-01	DD-103	BYA8S1	ED-01	DC5W1	5HK-S1	
C69	300		260235-3		DD-301	L10Y3	ED-300	UC-533	5GA-T3	

Note 1. A 1500MMF may be used in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SENTINEL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	250125-55	B-50	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			X2B-1	SWS-13	76-1	U8-16	
R2	300K	½	250132-5				TA184L	Brightness
R3	1.35Meg	½	250133-7				TA185L	Vert. Hold
R4	3000Ω	½	250126-54	B-706	A47-3000-S	Q17-110	U7	Contrast
R5A	1.35Meg	½	250137-1					Vert. Size
B	300Ω	½						Vert. Lin.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SENTINEL PART No.	IRC PART No.	NOTES
R6	100K		250104-68	BTS-100K	
R7	100K		250104-68	BTS-100K	
R8	9300Ω		250104-72	BTS-9300	
R9	33K		250104-60	BTS-33K	
R10	330K		250104-83	BTS-330K	
R11	3300Ω		250104-68	BTS-3300	
R12	10K		250104-74	BTS-10K	
R13	47K		250104-63	BTS-47K	
R14	680Ω		250104-60	BTS-680	
R15	10K		250104-74	BTS-10K	
R16	10K		250104-74	BTS-10K	
R17	150Ω		250104-52	BTS-150	
R18	3300Ω	1	250105-68	BTA-3300	
R19	1000Ω		250104-62	BTS-1000	
R20	33K 5%		250104-186		
R21	560Ω		250104-58	BTS-330	
R22	100Ω		250104-50	BTS-100	
R23	33Ω		250104-46	BTS-33	
R24	15K 5%		250094-167	BTS-15K 5%	
R25	330Ω		250104-56	BTS-330	
R26	120Ω		250104-54	BTS-120	
R27	47000 5%		250094-175	BTS-4700 5%	
R28	470K		250104-84	BTS-470K	
R29	4700Ω	1	250105-70	BTA-4700	
R30	100K		250104-76	BTS-100K	
R31	6800Ω		250104-60	BTS-680	Note 1
R32	330K		250104-80	BTS-330K	
R33	5600Ω		250104-72	BTS-5600	
R34	220Ω		250104-54	BTS-220	
R35	6800Ω		250104-72	BTS-6800	
R36	680Ω		250104-60	BTS-680	
R37	470K		250104-84	BTS-470K	
R38	470K		250104-84	BTS-470K	
R39	120Ω		250104-51	BTS-120	
R40	470K		250104-84	BTS-470K	
R41	1.5Meg		250104-100	BTS-1.5Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SENTINEL PART No.	IRC PART No.	NOTES
R42	20Meg 5%		250094-262	BTS-20Meg 5%	
R43	5.5Meg		250104-100	BTS-5.5Meg	
R44	2.7Meg 5%		250094-241	BTS 2.7Meg 5%	
R45	470K		250104-84	BTS-470K	
R46	22K		250104-78	BTS-22K	
R47	10000 5%		250094-159	BTS-1000 5%	
R48	15000 5%		250094-163	BTS-1500 5%	
R49	12000 5%		250094-161	BTS-1200 5%	
R50	1Meg 5%		250094-231	BTS-1Meg 5%	
R51	3.3Meg 5%			BTS-3 3Meg 5%	
R52	180Ω	1	250105-53	BTA-180	
R53	100K		250104-88	BTS-100K	
R54	4700Ω		250104-70	BTS-4700	
R55	270Ω		250104-55		
R56	470Ω		250104-55		
R57	100K		250104-65		
R58	100K		250104-65		
R59	10Ω	1	250105-38		
R60	470K		250104-94		
R61	4.7Meg		250104-108		
R62	75000 5%		250094-180		
R63	2200Ω 5%		250094-167		
R64	100K 5%		250094-207	BTS-100K 5%	
R65	180K 5%		250094-223	BTS-180K 5%	
R66	22K 5%		250094-191	BTS-22K 5%	
R67	33K		250104-82		
R68	300K 5%		250094-224	BTS-300K 5%	
R69	18K 5%		250094-189	BTS-18K 5%	
R70	560Ω	1	250105-59	BTA-560	
R71	3.3Ω	2	250107-4	RW1-3.3	
R72	100Ω	2	250146-50	BTB-100	
R73	5Ω		250074-4	FR5.8	
R74	120K		250104-90	BTS-120K	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA SENTINEL PART No.	Hellerson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Osc. Trans.	320270-1							
T2	Horiz. Output Trans.	320569-1							
T3	Vert. Output Trans.	320269-1	21900 ① ②	HVO-133		V314 ①	SHO-288 *	26S75 ① ②	A-16X ④
T4A	Yoke (90°) Horiz. (30MH)	360680-1	DF607 ③ ⑦	MDF-92 ③ ⑦	225DI ③ ⑦	Y90F19/43 ③ ⑦	A-8149 ① DY-16A ⑤ ⑦	Y-18 ⑤ ⑦	Y-41 ⑤ YCI ⑤ CL4 ⑤
B	Vert. (48.5MH)	360686-1 ⑤					DY-26A ⑤ ⑦		

① Use 7 to 1 horne ratio.
② Connect as auto transformer.
③ Drill new mounting hole(s).
④ Cut and tape blanking lead.
⑤ Yoke rear cover and centering device.
⑥ Use original yoke damping network.
⑦ Use original rear cover and centering device.
⑧ Yoke clamp.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Hellerson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
1					1		
2					2		
3					3		
4					4		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SENTINEL PART No.	Hellerson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	3400Ω	3-4Ω	320268-1	21105 ① ②	A-2998	A-2332	22S46 ①	S-19X ① ③	① Drill one new mtg. hole. ② Tape taps on primary windings ③ Tape tap on primary winding

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA SENTINEL PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	CS50045-1	46A1	

COILS (RF-IF)

ITEM No.	USE	SENTINEL PART No.	NOTES
L1	IF Trap Coil	380415-36	
L2	IF Trap Coil	380415-36	
L3	Ant. Trans.	380482-1	
L4	RF Choke	380801-8	
L5	RF Choke	380415-66	
L6	RF Choke	380801-8	
L7	RF Choke	380801-8	
L8	RF Choke	380801-8	
L9	Mixer Plate Coil	380540-1	

ITEM No.	USE	REPLACEMENT DATA SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L10	1st. Video IF	380681-1				
L11	2nd. Video IF	380682-1				
L12	Shunt Peaking Coil	380587-3	19-4400		6136	430 Microhenries
L13	Series Peaking Coil	380587-1	19-4201		6154	215 Microhenries
L14	Shunt Peaking Coil	380687-4	19-3250	TV-185	6181	255 Microhenries
L15	1st Sound IF	380684-1				
L16	2nd Sound IF	380685-1				
L17	Quadrature Coil	380686-1				
L18	Line Choke	380670-1				1.7 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI	DC RES. SEC	REPLACEMENT DATA SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	NOTES
L19	68Ω		380659-1							

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT (000 ^a)	REPLACEMENT DATA SENTINEL PART No.	Hellerson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L20	285A	24Ω	9 HY	320268-1	C5037 ①	C-4998 ①	C-4238 ①	26C44	C-35X

① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SENTINEL PART No.	REPLACEMENT DATA
K1	Ant. Input	470MMF, 1Meg	250233-1	
K3	Ant. Input	470MMF, 1Meg	250233-1	
K3	Vert. Integrator	1000MMF, 5000MMF, 5000MMF, 22K, 8200Ω, 8200Ω	250232-1	Aerovox PA-110 Centralab PC-100 Cornell-Dubilier 115TM1 Erie 1405-01 Sprague V-1

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SENTINEL PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	285A	CS30041-1 ①	1035A ①	1N207 ②	M1350 ①	6325D ①	350A ①	

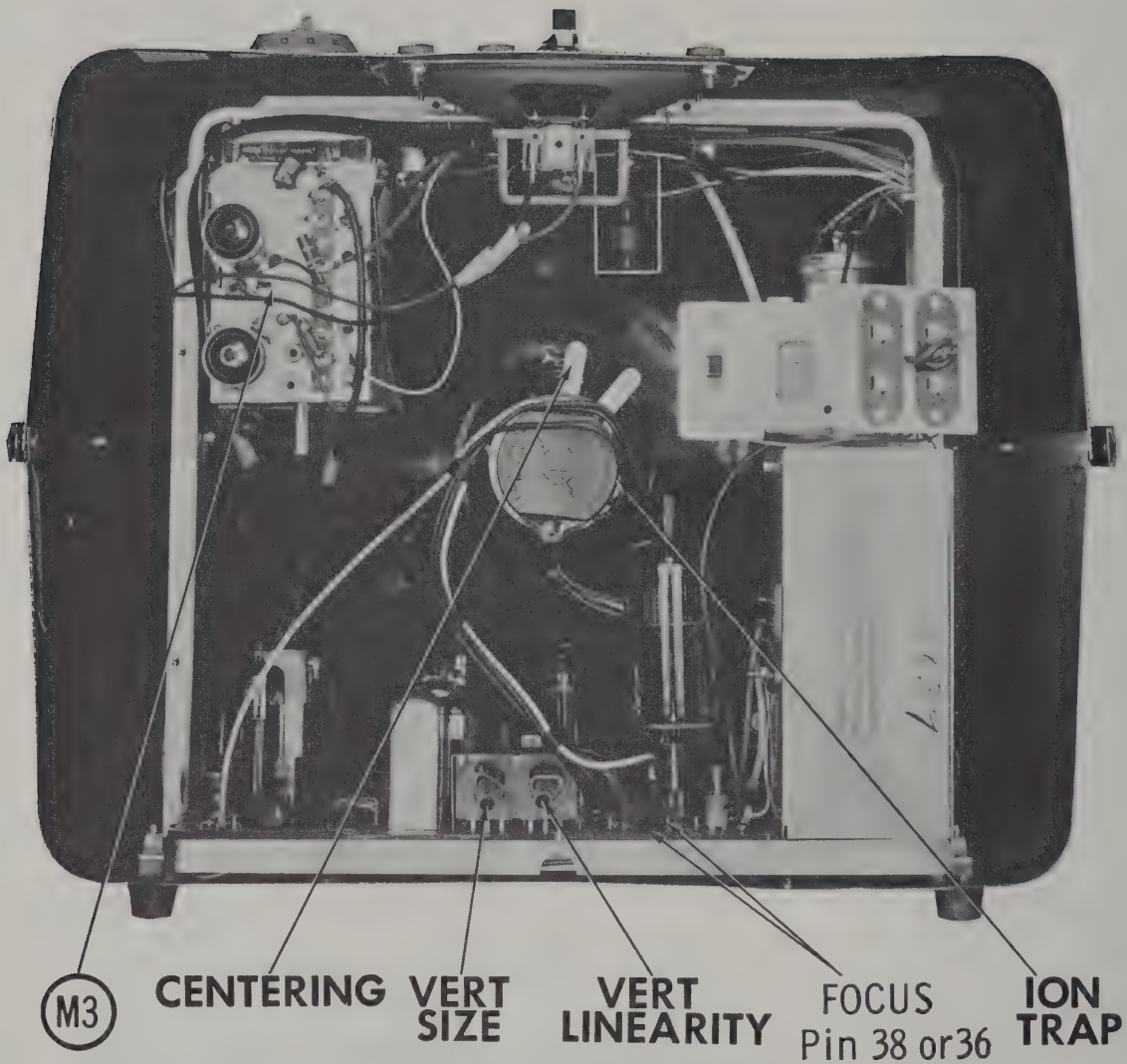
① Selenium type . ② Germanium type.

CRYSTAL DIODES

ITEM No.	ORIG TYPE	REPLACEMENT DATA SENTINEL PART No.	SYLVANIA PART No.	NOTES
M2	1N54		1N60	Video Detector (Chip-in)

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M3	Tuner	700558-1	VHF
	Tuner	700558-1	UHF
M4	Video Det. Assy.	340962-1	Includes 3rd. Video IF, Series Peaking Coil, Cap., resistor and M2
M5	Switch	180273-1	Strong-Normal-Distant. Slide Type (DPDT)
M6	Centering Device	390658-1	Not used in early versions.
M7	Do Trap	380421-5	Includes Yoke Rear cover
	Printed Board	200002-6	Video
	Printed Board	200004	Sound-Sync



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.

2. Set the brightness and contrast controls for a normal picture.

3. Loosen set screw and turn the horizontal hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

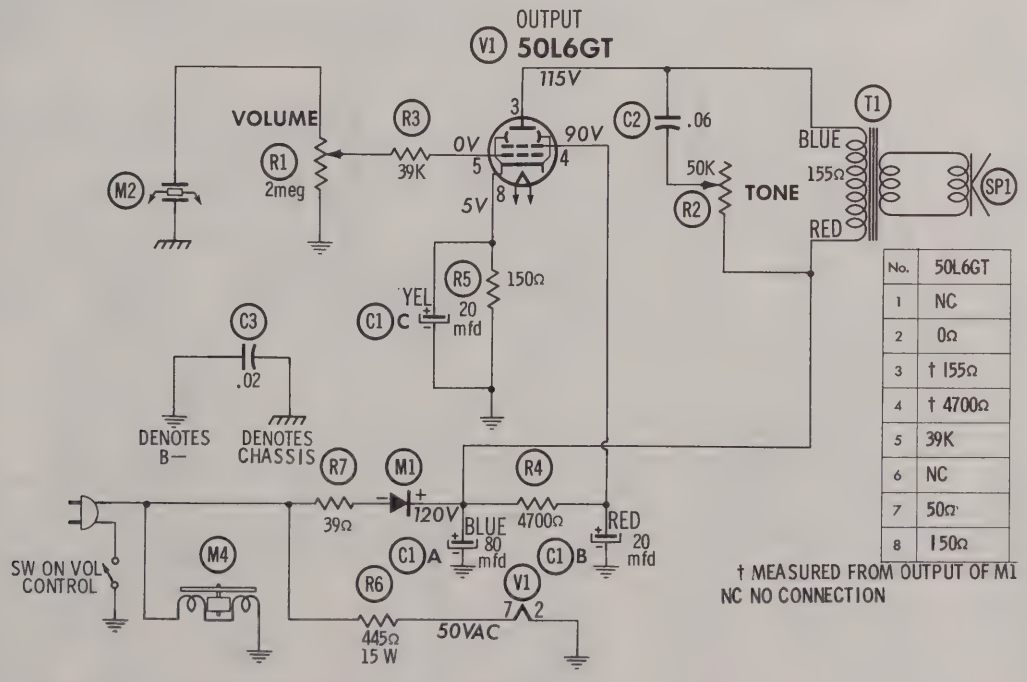
4. Turn the horizontal hold slowly counter clockwise until the picture just falls into sync. Tighten set screw.

SILVERTONE MODELS
4244, 42441 (Ch. 137.916, -A)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS
4244, 42441 (Ch. 137.916, -A)

TRADE NAME	Silvertone Models 4244, 42441 (Ch. 137.916, 137.916-A)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 50L6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .25 Amp. @ 117 Volts AC



No.	50L6GT
1	NC
2	0Ω
3	† 155Ω
4	† 4700Ω
5	39K
6	NC
7	50Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

371-9

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America
G709

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	50L6GT	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	C10427	PRS150/25V	BBRT8415C	TCT3117	TDLT-7	FMT-333	TVA-3455
B	20	150		8040/20					
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.06	200	C11509	P288N-06		CUB6S6		GEM-416	6TM-S6	
C3	.02	200	C11508	BPD-02	DF-203	CUB2S2	ED-02	GEM-412	2TM-S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2Meg	1/2	C11512					Volume & Switch
R2	50K		C11507					Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R3	39K		C9144	BTS-39K	
R4	4700Ω		C10429	BTS-4700	
R5	150Ω		C9897	BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R6	445Ω	15	C10585		
R7	39Ω		C10428	BTS-39	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2350Ω	3-4Ω	Part of Spkr. C10526	Z1101	A-3025	A-3332	26S58 ①	S-12X	① Use Original Channel Mtg.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	C10526 ①	4A07	① Includes T1

SELENIUM RECTIFIER

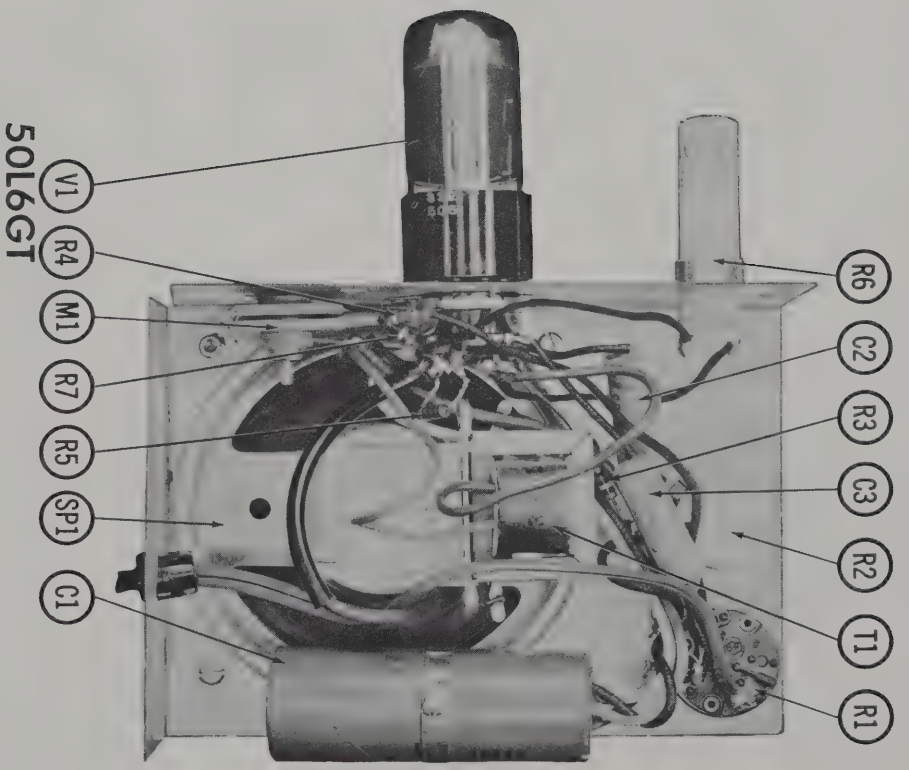
ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SILVERTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.047A	C10432	1386	RS065Q	6S65	65	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2	C10687	22	N4-2 (J)	52-2	PFT-1	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M3	C10682	* J-152 or * J-252	* W-14AGA	* Metal

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Phono Motor	C11474	Chassis 137.916
	Phono Motor	C11515	Chassis 137.916-A
	Case	C4244	Brown or Red (Specify Color)
	Knob	C11486	

SYLVANIA
MODELS 1202, 2301 (Ch. 1-615-1, -2)

SYLVANIA
MODELS 1202, 2301 (Ch. 1-615-1, -2)

TRADE NAME	Sylvania Models 1202DG, 1202PI, 1202TU, 2301DG, 2301H (Ch. 1-615-1, 1-615-2)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Tel. Div., 700 Ellicott St., Batavia, N.Y.
TYPE SET	AC Operated AM Receiver (Models 2301DG, H Include Clock)
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .42 Amp. @ 117 Volts AC (43 Watts)
TUNING RANGE—BROADCAST	540KC-1650KC

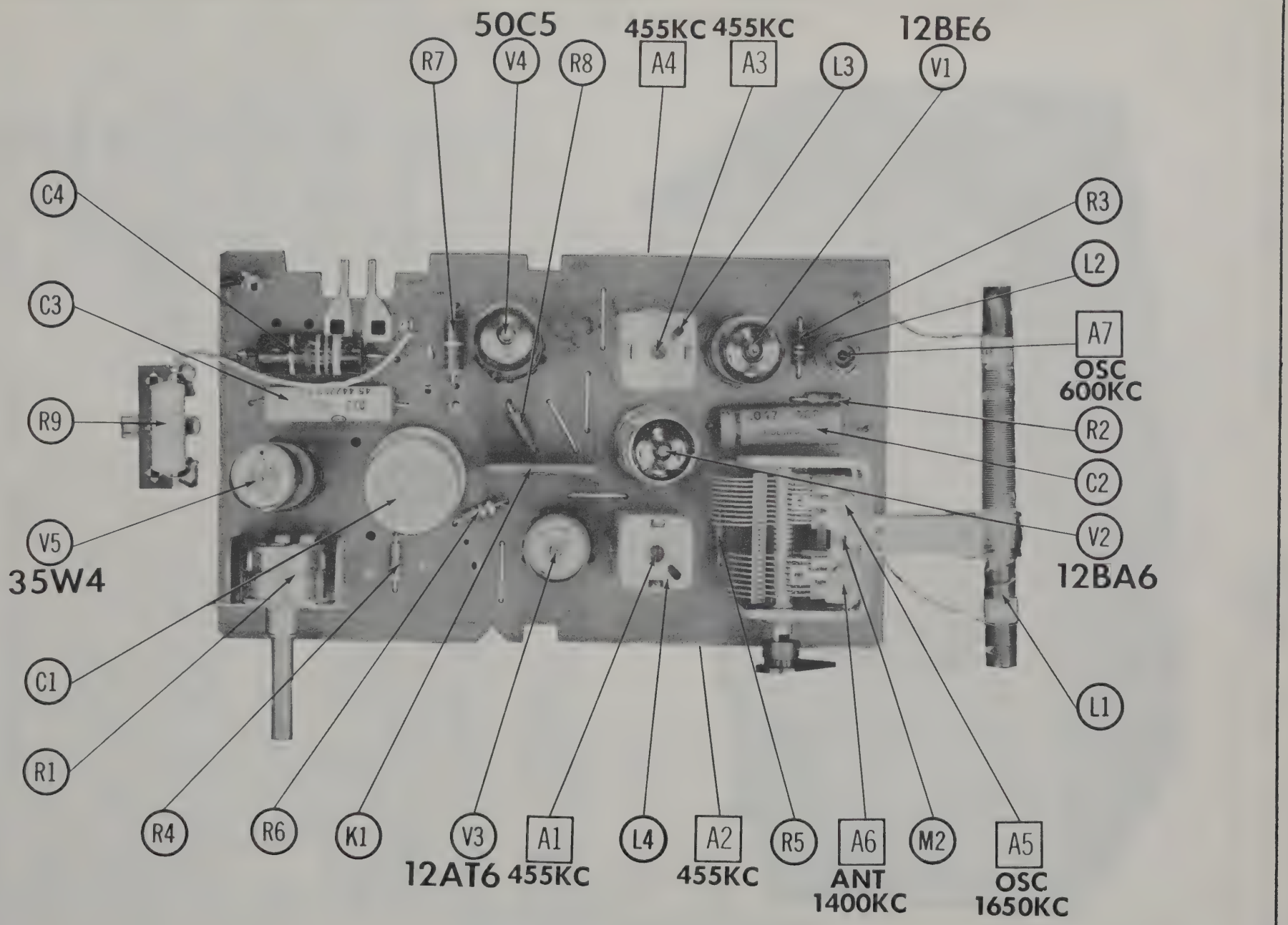
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 7 (grid) of 12BE6 (V1) Low side to B- (V2 Tube Shield)	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	1400KC	"	A6	"
4		"	600KC	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking gang.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
"Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America
G991



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AT6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■70	150	161-2016	PRS150V50	BBRT53215	TCT3107	TDLT-6	FMT-315	TVA-2460
B	▲30	150		3020					

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	400	169-0021	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C3	.022	400	169-0022	BPD-02	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C4	.047	400	169-0021	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	5Meg	½	157-0045 157-0048					Volume & Switch (Model 1202) Volume (Model 2301)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	22Ω		181-0220	BTS-22	
R3	22K		181-0223	BTS-22K	
R4	3.3Meg		181-0335	BTS-3.3Meg	
R5	150Ω		181-0151	BTS-150	
R6	47K		181-0473	BTS-47K	
R7	1200Ω	1	181-0122	BTA-1200	
R8	150Ω		181-0151	BTS-150	
R9	100Ω	3	189-0063	PW4-100	Note 1

Note 1. Model 2301 Use 120Ω (Part #189-0064)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	3-4Ω	143-0052 ① 143-0053 ②	Z1103 ③	A-3025 ④	A-3876	22S45	S-1X	① Used in Model 1202 ② Used in Model 2301 ③ Tape tap on primary winding. ④ Drill one new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	539-0414 ①	4A07Z8	① Used in Model 1202
	4"	PM		539-0417 ②		② Used in Model 2301
SP2	4"	PM	6-8Ω	539-0413 ①③	4A07Z7.2	③ Part # Includes T1
	4"	PM		539-0416 ②③		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

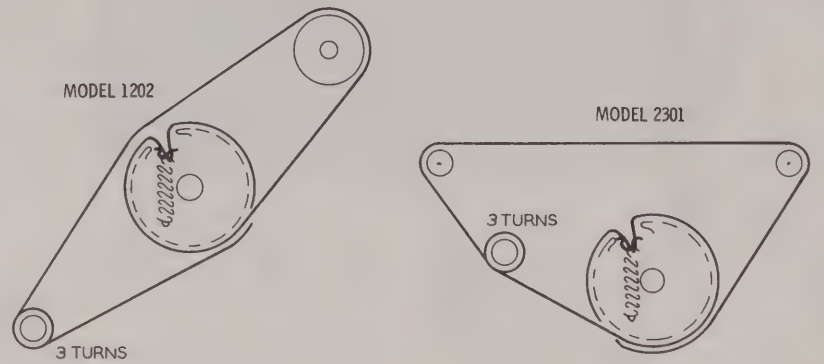
ITEM No.	USE	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	Loop Stick	581-0010				
L2	Osc. Coil	113-0037				
L3	Input IF	121-0027	16-6780	BC-356	13-PC1	
L4	Output IF	121-0027	16-6780	BC-357	13-PC2	

COMPONENT COMBINATIONS

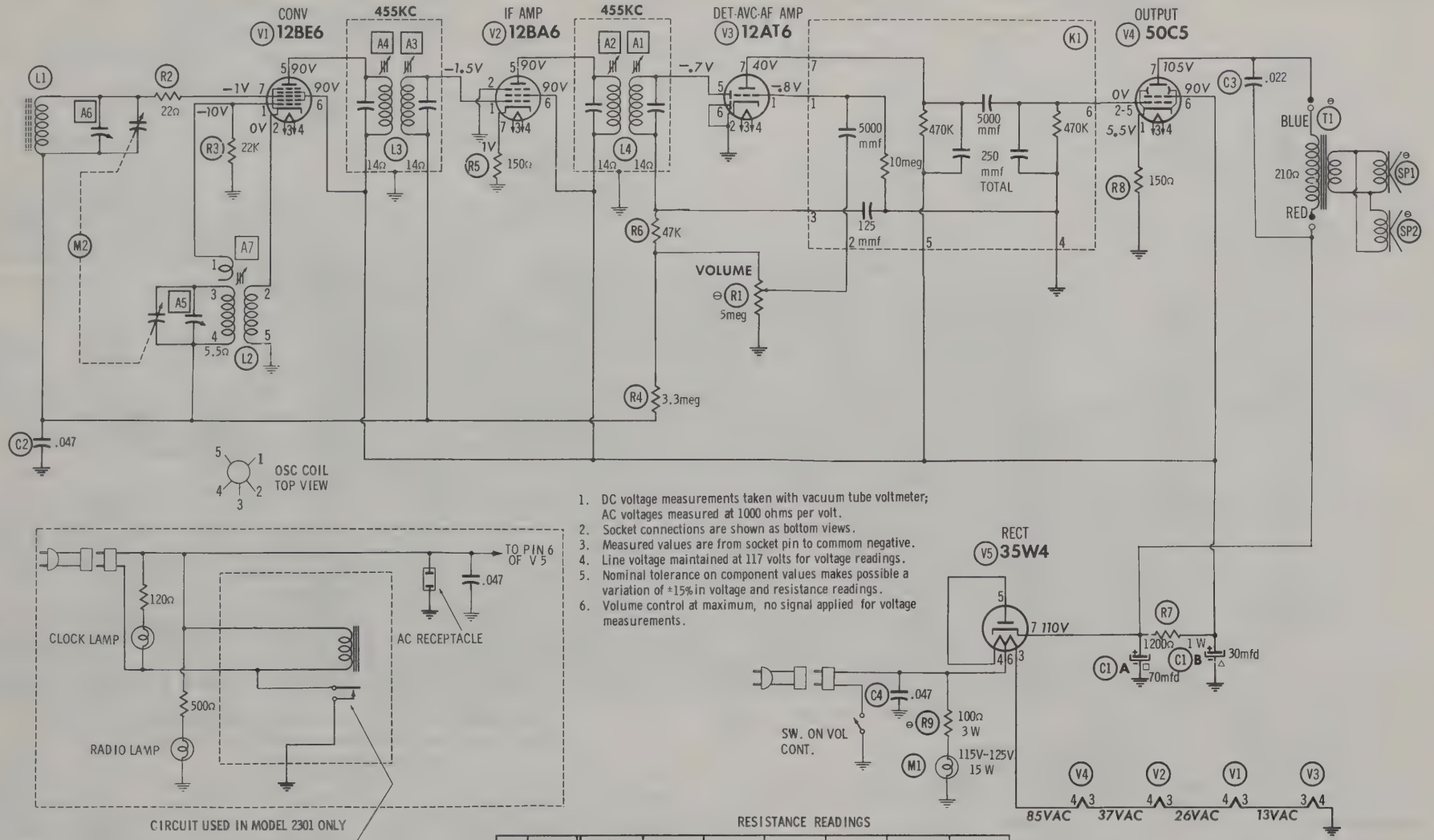
ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K1	Det. Audio Couplate	5000MMF, 125MMF, 5000MMF, 250MMF, 10Meg, 470K, 470K	190-0028	

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M1	Lamp	611-0008	115-125V, 15 Watt
M2	Tuning Cap	170-0023	2 Gang (Ant. 24-270MMF)
	Printed Panel	190-0028	
	Knob	740-0112	Tuning, Model 1202DG
	Knob	741-0031	Tuning, Model 1202PI
	Knob	741-0030	Tuning, Model 1202TU
	Knob	740-0123	Tuning, Model 2301DG
	Knob	740-0129	Tuning, Model 2301H
	Knob	740-0111	Volume, Model 1202DG
	Knob	740-0122	Volume, Model 1202PI
	Knob	740-0121	Volume, Model 1202TU
	Knob	740-0123	Volume, Model 2301DG
	Knob	740-0129	Volume, Model 2301H
	Knob	740-0120	Clock On-Off, Models 2301DG, 2301H
	Knob	740-0115	Sleep Control, Models 2301DG, 2301H
	Cabinet	813-0094	Model 1202DG
	Cabinet	813-0082	Model 1202PI
	Cabinet	813-0083	Model 1202TU
	Cabinet	813-0102	Model 2301DG
	Cabinet	813-0103	Model 2301H
	Pointer	792-0018	Model 1202DG, 1202PI, 1202TU
	Pointer	792-0019	Model 2301DG, 2301H



DIAL CORD STRINGING



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.8Ω	13Ω	24Ω	†1200Ω	†1200Ω	8.3Meg
V2	12BA6	8.3Meg	0Ω	24Ω	34Ω	†1200Ω	†1200Ω	150Ω
V3	12AT6	10Meg	0Ω	13Ω	0Ω	5Meg	0Ω	†470K
V4	50C5	150Ω	470K	34Ω	65Ω	470K	†1200Ω	†210Ω
V5	35W4	NC	TP	65Ω	80Ω	80Ω	75Ω	20(Min)

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

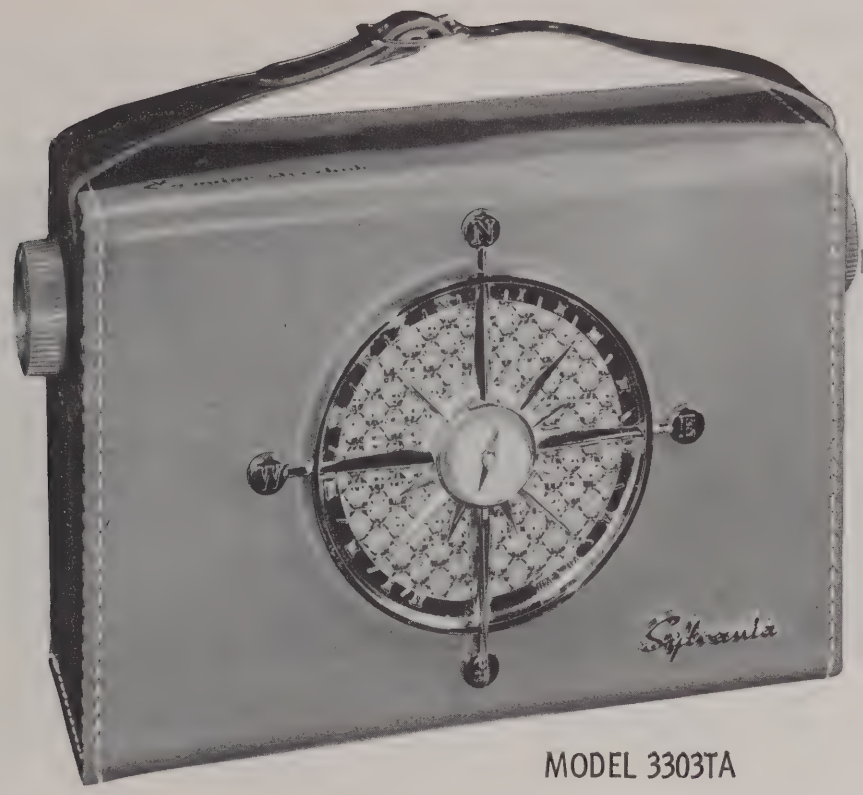
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

371-10

SYLVANIA MODELS 3202GR, LG, PI, 3303TA, 3304E, RE, TA (Ch. 1-612-2)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



MODEL 3303TA

TRADE NAME	Sylvania Models 3202GR, LG, PI; 3303TA; 3304E, RE, TA (Ch. 1-612-2)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Tel. Div., 700 Ellicott St., Batavia, N. Y.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-125 Volts AC-DC (or) 7.5 Volts "A" Supply & 75 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 70MA @ 7.5 Volts DC & 21MA @ 75 Volts DC
TUNING RANGE—BROADCAST	540KC - 1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in the same relative position to chassis as when the receiver is in cabinet.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	Adjust freq. to coincide with setting of tuning gang.	Set tuning gang so that plates are meshed approx. 3/16".	"	A6	"
4		"	600KC	Set tuning gang so that plates are meshed except for approx. 3/8".	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

SYLVANIA
MODEL 3202GR (Ch. 1-612-2)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. -AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	161-4022	PR4-220		WQ2155			R1378 *
B	20	150							
C	20	150							
D	100	25							

* Non catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		168-0020	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C3	1000		166-1000P	SI 1000	D6-102	LT6D1	GP-1000	DC521	5HK-D1	①
C4	1000		166-1000P	SI 1000	D6-102	LT6D1	GP-1000	DC521	5HK-D1	
C5	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	②
C6	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	②
C7	10000		168-0020	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	.22	100	169-0036	P288N-22		CUB2P22		GEM-2022	2TM-P22	

① C3 & R4 may be combined in one unit (Part #190-0011)
② Some versions may use .033MFD (Part #160-04147)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	152-0033	B-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not req.	FS-3	Not req.	Not req.	
C	Switch			KB-2	SWE-20	76-1	US-27	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R2	100K		181-0104	BTS-100K	
R3	15K		181-0153	BTS-15K	
R4	3.3Meg		181-0335	BTS-3.3Meg	Note 1
R5	3.3Meg		181-0335	BTS-3.3Meg	
R6	2200Ω		181-0222	BTS-2200	
R7	820Ω		181-0821	BTS-820	
R8	1000Ω		181-0102	BTS-1000	

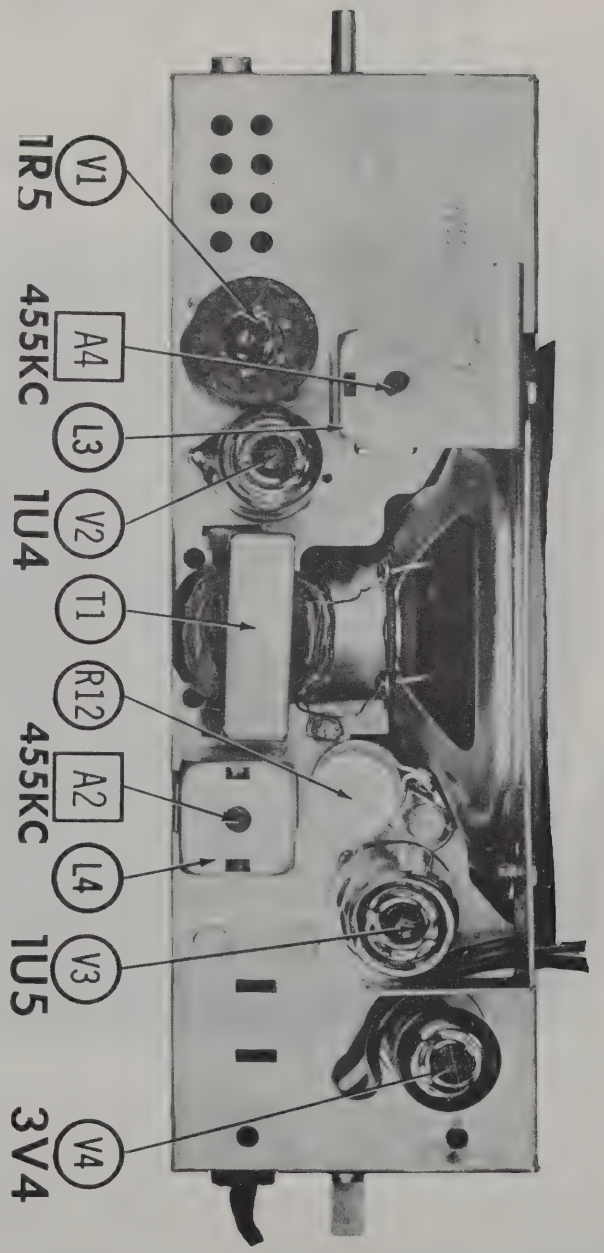
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R9	1200Ω		181-0122	BTS-1200	
R10	1200Ω		181-0122	BTS-1200	
R11	2200Ω		181-0222	BTS-2200	
R12A	1075Ω	3	187-0040		
B	1075Ω	3			
R13	68Ω	2	189-0060		

Note 1. C3 & R4 may be combined in one unit (Part #190-0011).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	8300Ω	3-4Ω	143-0051		A-2998①	A-3329 ①	24S49 ①	S-11X ①	① Bend ears down

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	539-0411	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	581-0007				
L2	Osc. Coil	113-0034				
L3	Input IF	121-0028	16-6758	BC-352	12-C1	
L4	Output IF	122-0028		BC-358		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K1	Det.-Audio Coup. Net.	2000MMF, 150MMF, 10000MMF, 150MMF, 5000MMF, 10Meg, 4.7Meg, 1Meg, 3.3Meg	190-0010	Aerovox PA-521 Centralab PC-165 Sprague DP-1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SYLVANIA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.064A	517-0012	1386	RSO65Q	6S75	75	

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M2	7.5V		C5		717		M-9		9		
M3	75V			XX50		437		M-212		212	

MISCELLANEOUS

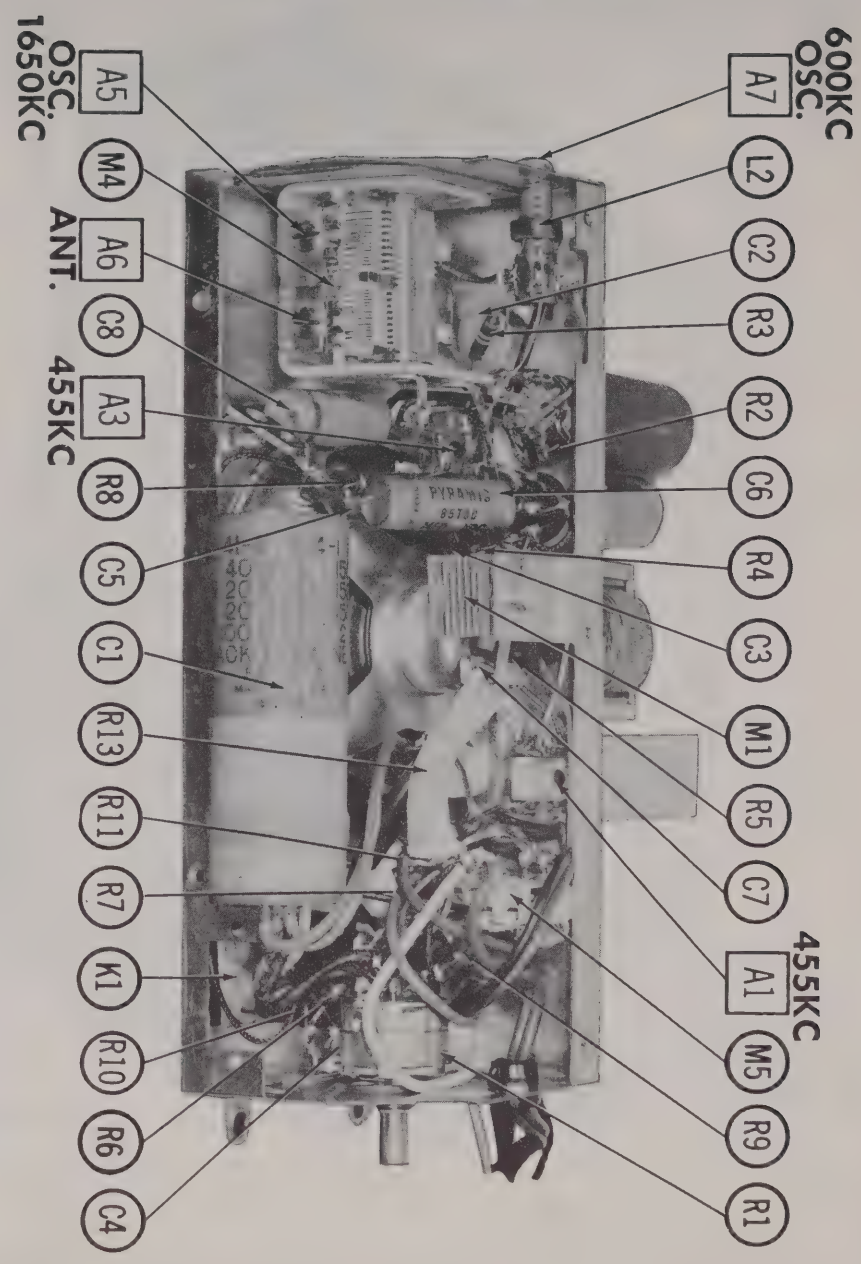
ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M4	Tuning Cap.	170-0021	2 Gang (Ant. 16-265MMF, Osc. 19-135MMF)
M5	Switch	573-0013	Power change over

CABINETS & CABINET PARTS

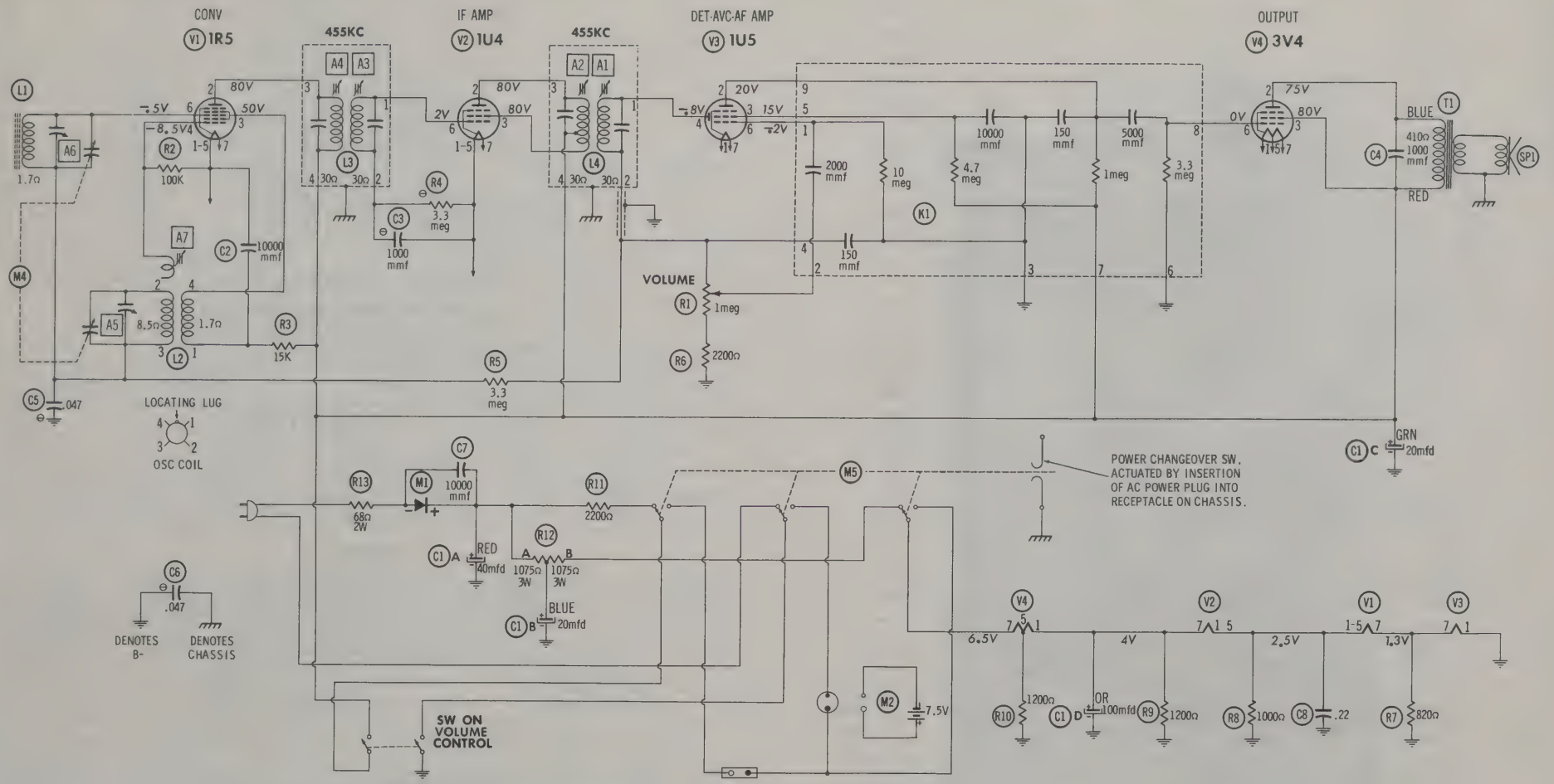
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	714-0100	Includes Sun Dial Arm Ass'y. Model 3303 Series
Bezel	714-0099	Includes Sun Dial Arm Ass'y. Model 3304 Series
Knob	742-0012	Tuning & On-Off-Volume Model 3303 Series
Knob	742-0006	Tuning Model 3304 Series
Knob	742-0008	Tuning Model 3202LG
Knob	742-0010	Tuning Model 3202GR & 3202PI
Knob	742-0007	On-Off-Volume Model 3304 Series
Knob	742-0009	On-Off-Volume Model 3202LG
Knob	742-0011	On-Off-Volume Model 3202GR & 3202PI
Cabinet	814-0011	Tan & Cordovan Model 3303TA
Cabinet	814-0005	Tan & Ivory Model 3304TA
Cabinet	814-0006	Ebony & Ivory Model 3304E
Cabinet	814-0007	Red & Ivory Model 3304RE
Cabinet	814-0008	Grey Model 3202LG
Cabinet	814-0009	Green Model 3202GR
Cabinet	814-0010	Red Model 3202PI
Strap	818-0095	Carrying Model 3304 Series
Strap	818-0099	Carrying Model 3303 Series

CHASSIS—BOTTOM VIEW



SYLVANIA
MODEL 3202GR (Ch. 1-612-2)



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†2200Ω	†17K	100K	*	4.3Meg	*
V2	1U4	*	†2200Ω	†2200Ω	TP	*	3.3Meg	*
V3	1U5	*	†1Meg	†4.7Meg	1Meg	TP	10Meg	*
V4	3V4	*	†2600Ω	†2200Ω	TP	*	3.3Meg	*

ALL MEASUREMENTS TAKEN IN "AC-DC" POSITION
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

TELEFUNKEN
MODEL TW560

TELEFUNKEN
MODEL TW560

GENERAL INFORMATION

The Telefunken Model TW560 Record Changer is designed to play in automatic sequence a stack of records and shut off after playing of the last record.

The Telefunken Model TW560 Record Changer is a three speed changer 33 1/3 RPM, 45 RPM and 78 RPM. With the use of an adaptor spindle 38K , records having a 1 1/2" center hole (45 RPM) can be played.

Record separation is accomplished by movement of a finger in the center spindle. This finger directly separates records having a 1/4" centerhole and actuates the knives and shelves of the centerpost used for the playing of 45 RPM records having a 1 1/2" centerhole.

The tripping method used is the velocity type in which the trip link causes a trip pawl to engage a projection on the turntable hub and start the mechanism into cycle.

Connect this changer to an outlet supplying 117 volts, 60 cycle AC only, unless otherwise specified.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

AMERICAN ELITE, INC.
7 PARK AVENUE
NEW YORK 16, N.Y.

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

Copyright 1957 • All Rights Reserved

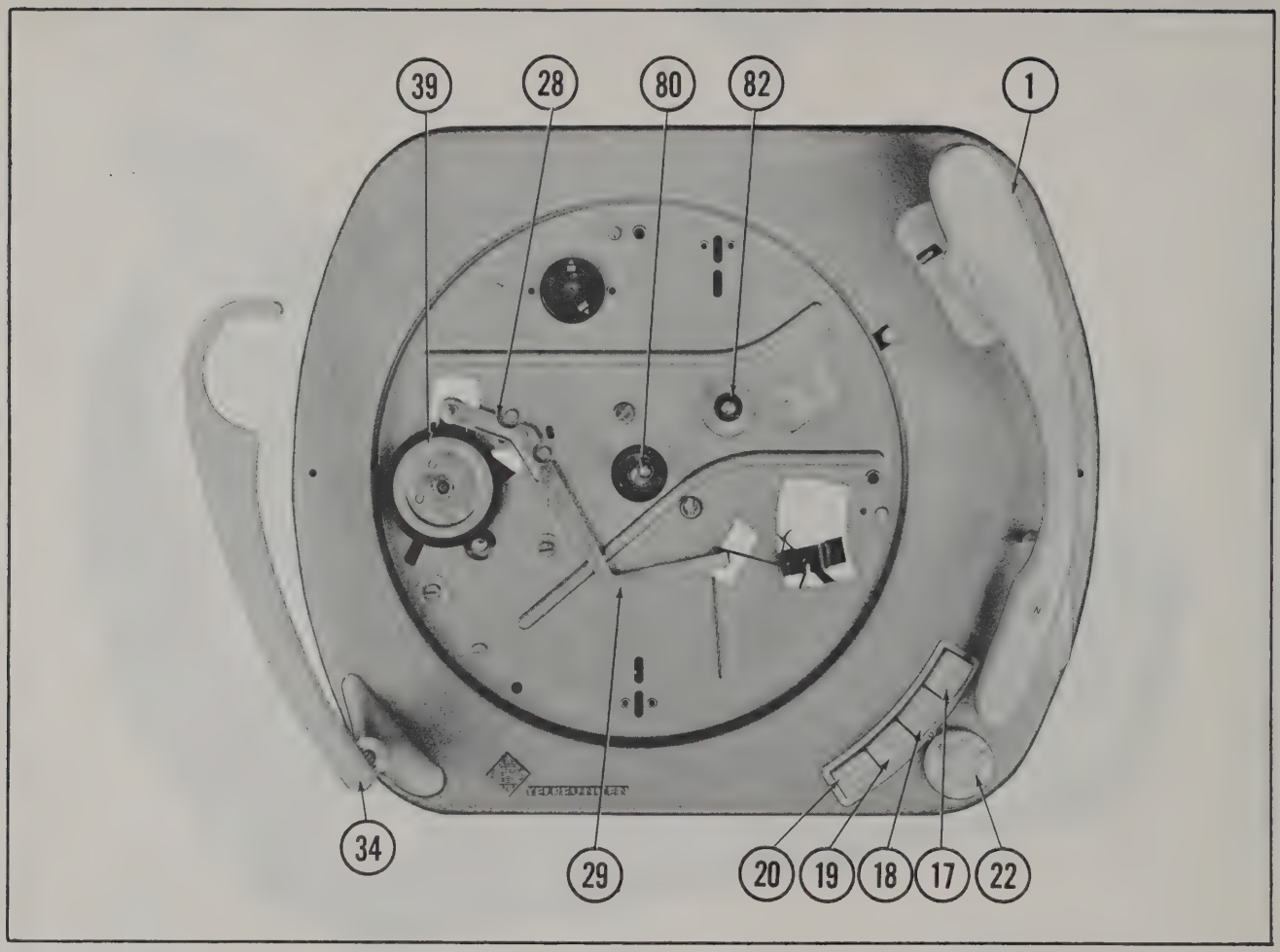


FIG. 1

SPECIFICATIONS

Frequency Range: 30-14,000 cps.

Needle Pressure: Approximately 8 grams.

Weight Of Changer: Net (7 lbs. 15 ozs.) gross (11 lbs. 3 ozs.).

Turntable: 9" in diameter.

Power Consumption: 11 watts.

Drive Mechanism - Friction wheel.

Space Required For Installation: Horizontal space 16 1/8" x 12 3/16".

Turntable Speed: 33 1/3", 45, or 78 r.p.m.

OPERATING INSTRUCTIONS

Loading-

1. Pull straight up on record support arm (34) until record support arm clear spindle, swing support out to the left.

2. Place records on spindle and lower to offset shelf. Hold records level and replace record support over spindle.

Starting-

To start the changer, after checking that the stylus and speed control is in the position corresponding to type records to be played. Depress "Start-Reject" button and release. The changer will operate automatically until the last record has been played, at which time, the pick-up arm is returned to its rest and the supply to the motor is switched off.

Rejecting-

To reject a record at any time while the changer is operating, depress "Start-Reject" button and release.

Stopping-

The changer may be stopped any time a record is playing by depressing changer push button "Off". Lift pick-up arm and place on rest.

Repeat-

If the push button "Repeat" is operated while a record is being played the changer spindle drops no record. The pick-up arm lifts off and sets down in the starting groove of the same record. Only with a 12" record, the needle sets down on the 10" diameter since no record is dropping and thus the control impulse for setting down on the 12" record diameter is missing.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE S:.
DENVER, COLORADO

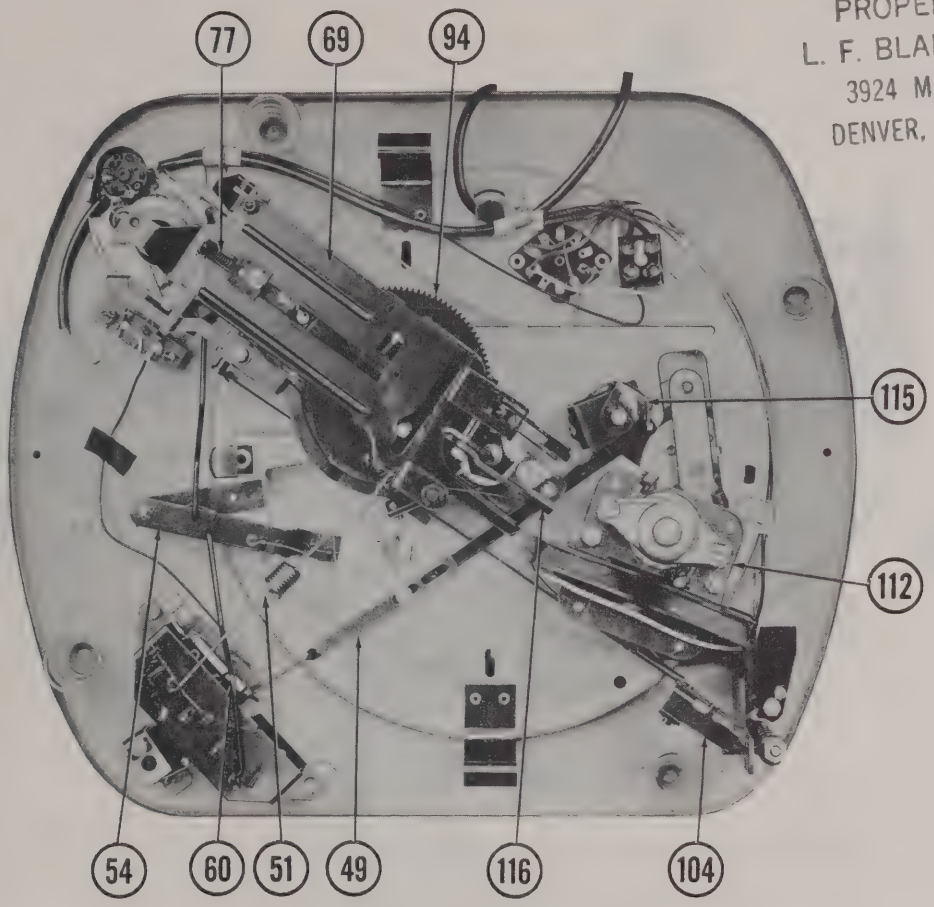


FIG. 2

Unloading-

Lift record support clear of spindle and swing out to the left. Using both hands, with fingers under the edge of bottom record, lift records straight up and off spindle.

CHANGE CYCLE

It is recommended that the change cycle operation be observed by rotating the turntable by hand. The action described below can then be readily followed and the function of each part more easily understood.

This changer is provided with what is known as velocity trip mechanism. The change cycle is started by the fast inward motion of the pick-up arm when the needle enters the trip grooves at the end of the record. Only records having fast-finishing grooves will operate this trip.

At the start of the change cycle main gear (94) starts rotating and drives the slide and cam assembly (69) forward and backward on the principle of the cross slide mechanism by the action of the eccentric pin under main gear which is sliding in the cross-slot. The motion of the slide and cam assembly performs the following functions.

1. Lifting the pick-up arm.

During its sliding motion, the cam surface at the rear of the slide and cam assembly (69) lifts the yielding lift pin (59) which, in turn, is lifting the pick-up arm from its rest post or from the record.

2. Swinging the pick-up arm to the outside.

During this upward motion, the trip finger cam (66B) riveted to the pick-up arm shaft (66) is pressed against the pick-up return locator plate (65) by a spring compressed by the lift pin (59). At the same time, the rectangular tab (69B) contacts the trip finger cam (66B) thus turning the pick-up arm shaft (66) and the pick-up arm to the outside.

3. Engagement of trip finger cam with return locator plate.

As soon as the trip finger cam (66B) and the return locator plate (65) are caught by the rectangular tap (69B) of the slide and cam assembly, the lug (66C) in the trip finger cam drops into the slotted hole in the return locator plate, in conjunction with the other motion described under (2).

4. Record drops.

The front end of the long slot (69A) in the slide and cam assembly turns the ejector link pawl (116) and the ejector link (116A). The latter acts through the pushing shaft (80A) in the changer spindle (80) on the record pusher (80C). Thus the bottom-most record

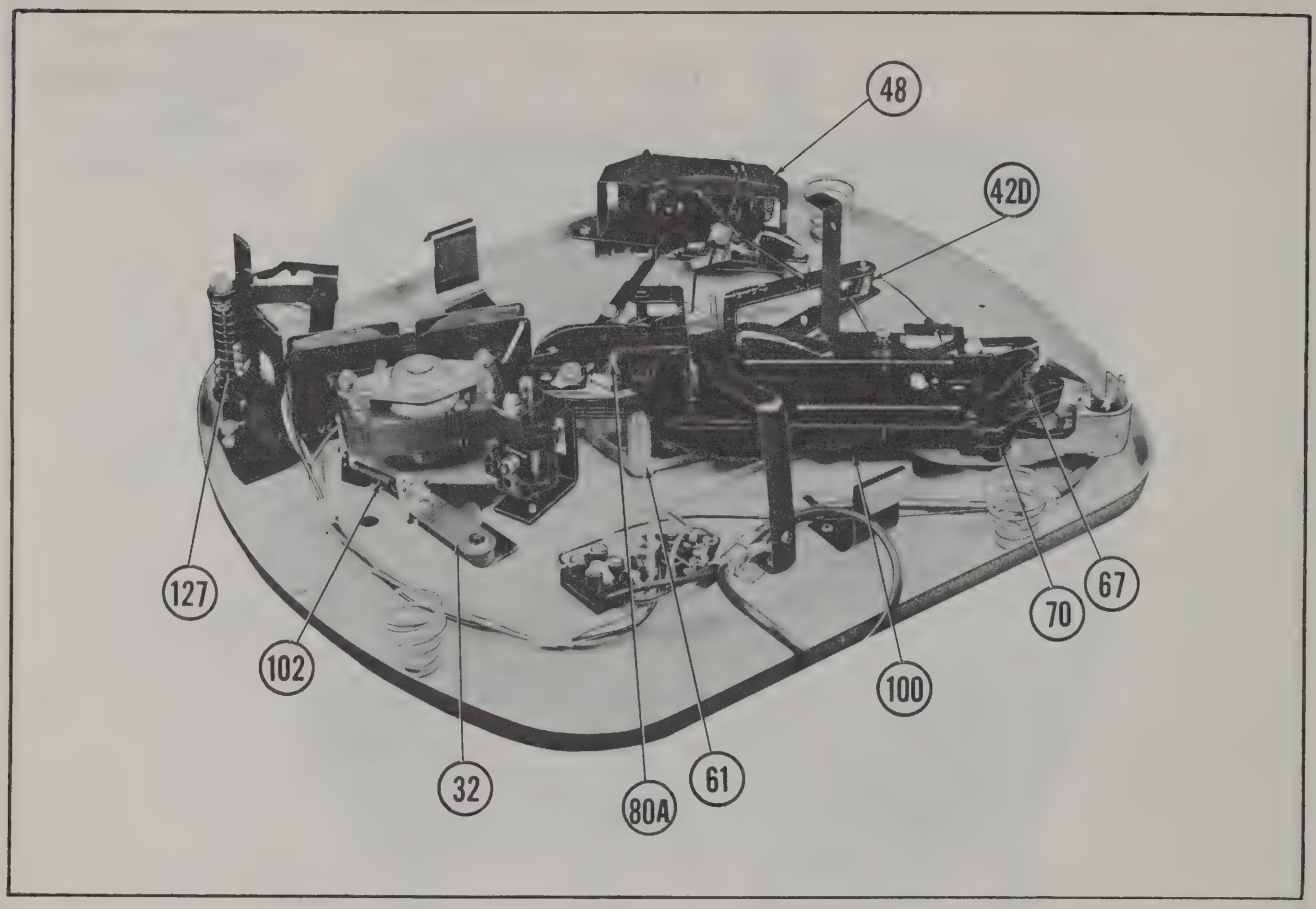


FIG. 3

of the stack resting on the step in the changer spindle is pushed to the side and drops onto the turntable. The spindle guide (80B) in the top part of the changer spindle (80) has the effect that not more than one record can drop.

After a rotation angle of the main gear beyond 180° the slide and cam assembly (69) starts it backward motion.

5. Inward motion of the pick-up arm.

The rectangular tab (69B) at the slide and cam assembly is now releasing the trip finger cam (66B) still engaged with the return locator plate (65). Both are rotated by the pick-up arm return spring (62) until one of the 3 steps of the return locator plate contacts the reset lever (87). This rotary motion of the trip finger cam (66B) riveted to the pick-up arm shaft effects the inward motion of the pick-up arm to the correct set-down position.

6. Setting-down of the pick-up arm onto the record. In the meantime, the slide and cam assembly (69) has moved back so as to allow the lift pin (59) to slide down the cam surface at the end of the slide and cam assembly. The pick-up arm is lowered so far that also the trip finger cam (66B) is disengaged from the return locator plate (65). The trip finger cam is now free to follow the slow inward motion of the pick-up arm while a record is being played.

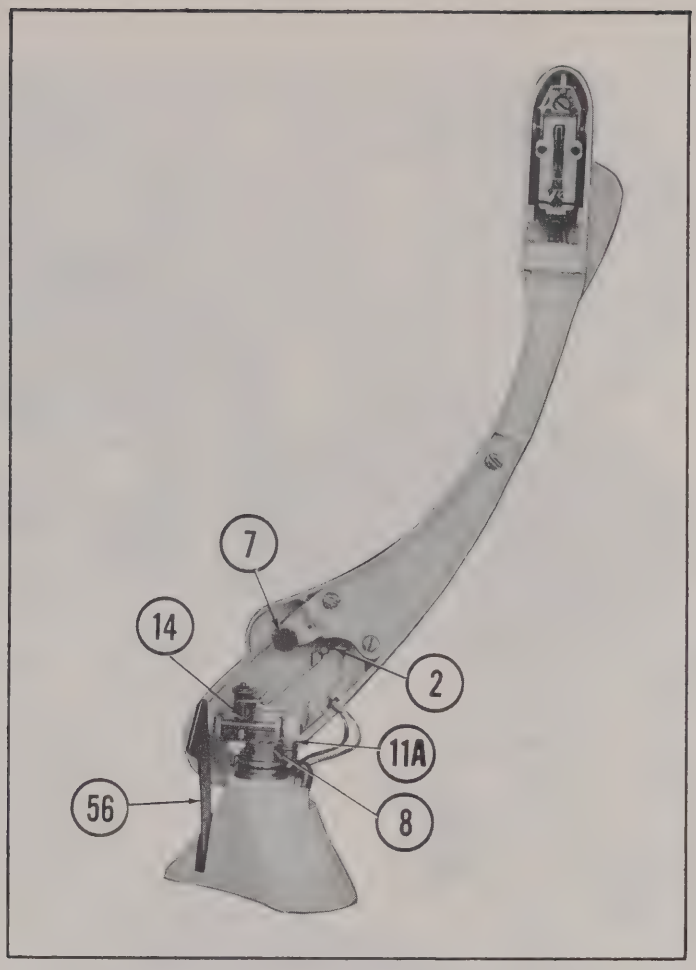
The main gear (94) is being rotated back to its zero position, and the trip pawl (94A) is pushed back to its inoperative position by the set back cam 15 at the bearing for the reset lever (87). Furthermore, the small pin under the main gear forces the trip lever (79B) and the trip link (79A) into their initial position. This trip pawl, trip lever, and trip link can no longer be caught by the projection (25A). Finally, the pinion on the turntable hub is rotating in the free sector of the main gear which stops rotating. The change cycle is completed.

Automatic Trip Operation-

The spiral groove in the record is slowly pulling the pick-up arm towards the record center, and thus also the trip finger cam (66B) is being turned. When the pick-up arm on the record has reached the inner range of somewhat more than 5", the trip finger can contact the trip lever (79B). Starting with this moment, the trip pawl (94A) is being turned toward the change spindle proportionately to the pitch of the grooves through trip lever (79B) and trip link (79A).

As long as the needle is following the pitch of the modulated grooves, the tiny motion of the trip pawl is not sufficient for engagement by the projection (25A) on the turntable hub. The trip pawl and simultaneously the trip link coupled with the trip lever by a slipping clutch, are pushed back by the projection (25A).

This is going on until the pick-up arm enters the coarse pitch of the fast-finishing trip groove. The coarse feed now being exerted on the trip pawl is sufficient for safe engagement: the revolution of the main gear is started. The entire process of the change cycle is then identical with that explained in Change Cycle.



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

FIG. 4

ADJUSTMENTS

Needle Set Down-

The set-down position of the needle is adjusted by means of the set down adjustment screw (11A) mounted on the hinge arm assembly (11). Turn this screw adjusting pick-up arm for correct set-down on a 10" record. When the correct set-down is obtained for the 10" position, the 12" and the 7" needle set-down will also be correct.

Pick-Up Arm Height-

The pick-up arm height is adjusted by the lift screw (7). To raise the height of the pick-up arm, turn this screw counter-clockwise. To lower the pick-up arm, turn clockwise. The pick-up arm height should be adjusted so that with a 30/32" stack of records on the turntable the pick-up arm lifts 1 2/32" straight up as the change cycle starts.

Needle Pressure-

The needle pressure should be between 10 and 12 grams. Adjustment is made by turning the adjustment screw (14), which gives the desired pressure.

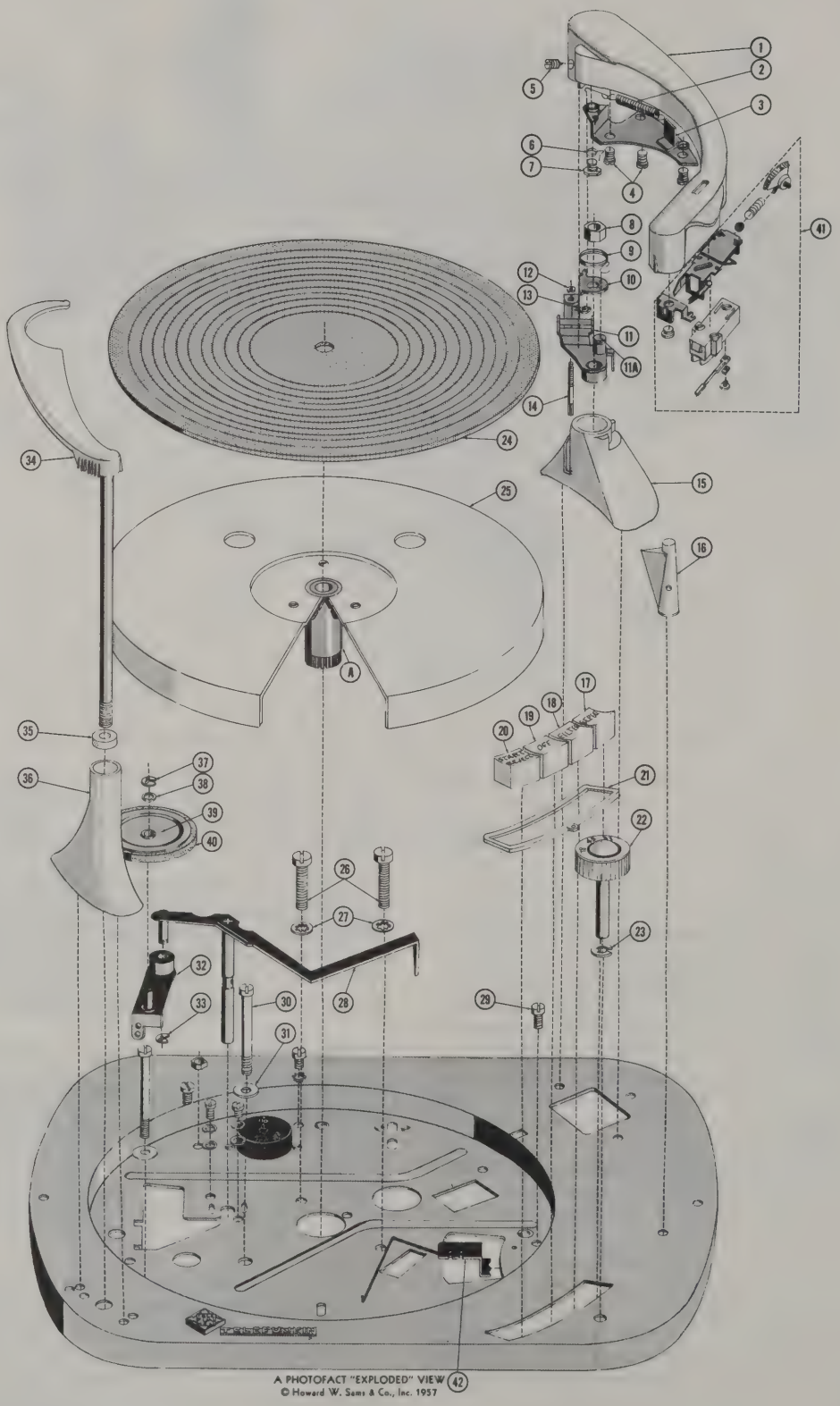


FIGURE 5A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

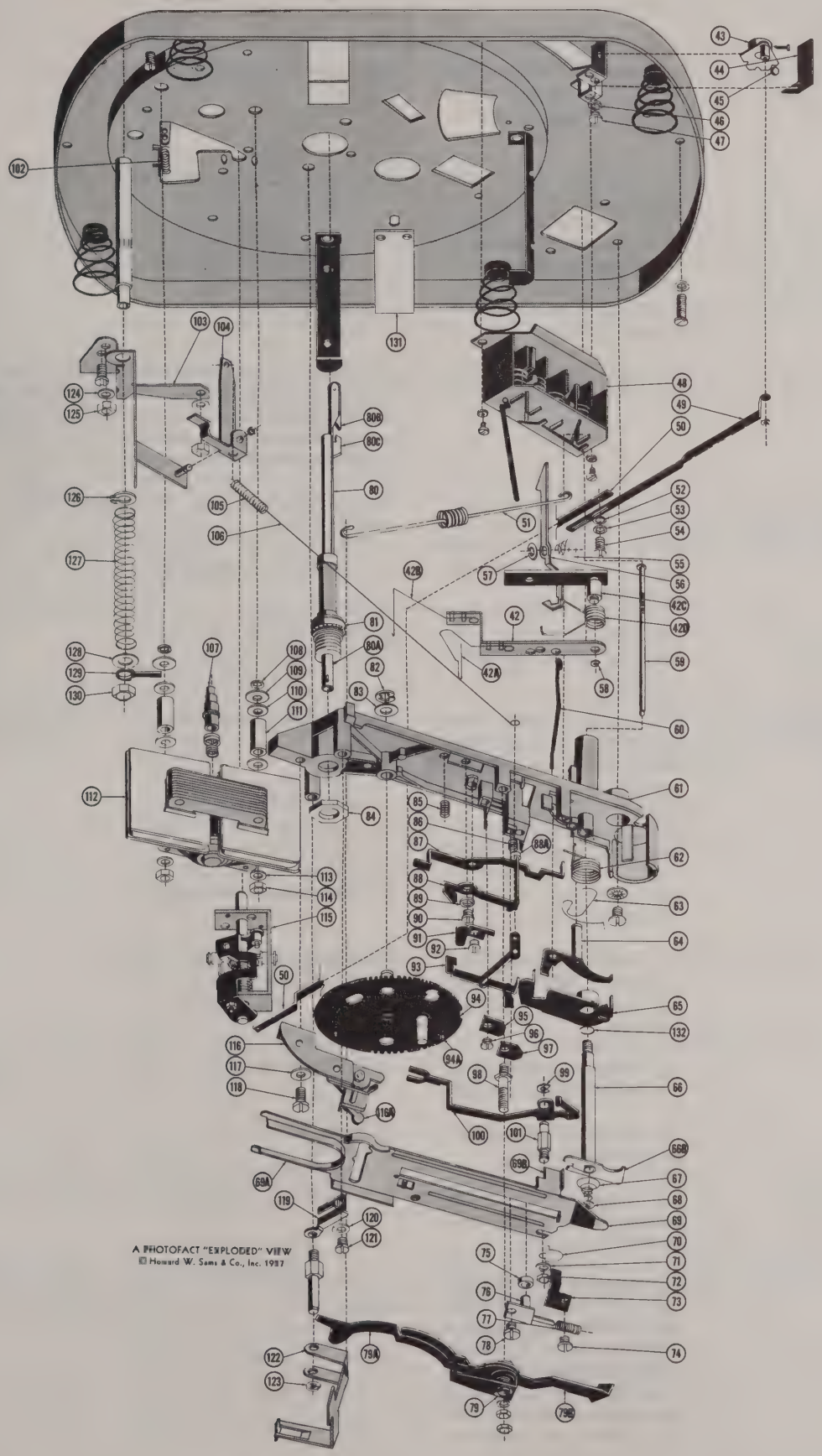


FIGURE 5B. EXPLODED VIEW OF PARTS BELOW BASEPLATE.

TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Push-button On/Rej. cannot be operated.	(a) Control link (100) is touching the mounting panel (wrong installation).	(a) Correct opening in mounting panel.
	(b) Control link (100) jamming with control lever (64) which may occur when operating push-button during the change cycle (during automatic switching-off cycle.)	(b) Clear jamming by pressing the control link down.
	(c) Lift-off spring (42b)	(c) Place spring back into proper position and bend correctly. (Idler wheel (39) must not contact the 78 r.p.m. step of the motor pulley. Check that slide and cam assembly moves back into zero position after automatic switching-off even with 33 r.p.m.).
Pick-up arm does not lift-off rest post. Change cycle does not start.	(a) Starter spring (42a) bent.	(a) Re-adjust spring. Necessary distance from trip link 0.02".
	(b) Trip pawl (94a) jamming.	(b) Replace main gear (94).
Turntable does not start revolving.	(a) Tension spring (102) for idler wheel unhooked or slack.	(a) Hook in, or replace.
Turntable stalls or moves erratic during change cycle.	(a) Grease on inner rim of turntable on step pulley (107), or on idler wheel (39).	(a) Remove grease with carbon tetrachloride.
	(b) Changer spindle (80) damaged, thus jamming.	(b) Replace.
	(c) Slide and cam assembly (69) bent.	(c) Straighten, or replace.
	(d) Bearing shaft of lift-off lever (28) jamming due to contamination or damage.	(d) Clean out dirt and lubricate.
	(e) Idler wheel bearing or lever bearing binding.	(e) Clean with benzine and lubricate.
	(f) Motor does not develop rated power.	(f) Replace.
Change cycle is repeated.	(a) Trip pawl (94a) is not pushed back by set-back cam (91).	(a) Check the set back cam for being mounted firmly.
	(b) Started spring (42a) is still contacting trip link (54a) after push-button On/Rej. has been released thus pushing the trip link towards the main gear after the small pin under this gear has forced the link back.	(b) Readjust the starting spring (42a). Necessary distance between spring and trip link (54a) 0.02".
	(c) The change cycle being completed trip pawl	(c) Distance between trip pawl and trip link in zero position of the main gear: not less than 0.02". Adjust

TROUBLE CHART (CON'T)

SYMPTOM	CAUSE	REMEDY
	(94a) is contacting trip link (79a) which turns it back into engagement with the hub projection thus starting the next change cycle.	stop bracket (119) for safe distance by bending.
Records fail to drop.	(a) Record pusher (80b) not protruding far enough.	(a) Re-adjust ejector link pawl (116) engaging with slot (69a) in the slide and cam assembly, but in such a way that the safety bolt is not forced into pushing shaft (80a).
	(b) Record ballast arm (34) jams records on changer spindle.	(b) Level record ballast arm. Records must be held in parallel with the turntable.
More than one record drop at a time.	(a) Thickness of records used is less than 1/16" (not up to standard) or center holes have been damaged.	(a) Use standardized, records. Not worn-out records.
	(b) Spindle guide (80c) binding. Should drop easily after being lifted.	Clean spindle guide, or straighten until it drops freely by gravity. Do by no means lubricate.
	(c) Spindle guide (80c) has been pulled up some how after records have been loaded.	(c) Wrong operation.
Changer trips too early, or not at all.	(a) Wrong adjustment of stop bracket (119) for trip link (79a).	(a) Bend the stop bracket for the trip link until the changer trips in the range 5-3/16". The trip should move freely in the slot of the stop.
	(b) Trip pawl (94a) jamming.	(b) Replace main gear (94).
45 r.p.m. spindle 38K does not work.	(a) 45 r.p.m. spindle not pressed down completely.	Wrong operation.
	(b) Record ballast arm bent or swung into position forcefully.	(b) Straight, or adjust, and then tighten lock nut for guide pilot (129).
(a) Pick-up arm sets down in wrong position, all record sizes.	(a) Pick-up arm adjustment changed.	Pick-up arm should be re-adjusted (See Pick-up arm adjustment).
(b) Set down in 7" position instead of 10" position.	(b) Knobs of turntable rubber cover do not fit into corresponding holes in turntable.	(b) Place rubber cover correctly.
Pick-up arm hits records on spindle or turntable.	(a) Wrong pick-up arm height adjustment.	Turn lift adjustment screw (7). Screw should fit tightly (max. height of records on turntable 30/32". Height of needle above turntable cover: 1 1/32" to 1 2/32".
	(b) Pick-up arm hinge bracket (11) bent.	(b) Straighten.
Needle jumps out of groove.	(a) Needle point worn out, or needle clogged with dust.	(a) Replace, or clean out dirt.
	(b) Needle pressure to low.	(b) Turn needle pressure screw (14). (Weight of pick-up arm resting on record should be 10 to 12 grams measured directly above the needle.

TROUBLE CHART (CON'T)

SYMPTOM	CAUSE	REMEDY
Noise while playing a record. (a) Rumbling sound.	(a) Foreign particles in turntable ball bearings, balls jamming in ball-bearing spacer, rough surface of washers.	(a) Clean and lubricate or replace.
(b) Excessive hiss.	(b) Needle damaged, record worn out or defective.	(b) Replace.
Flutter and "Wow".	(a) Touching lever (88) protrudes too far thus breaking records.	(a) Adjust touching lever, check bumper (88a).
	(b) Turntable bearing binding.	(b) Clean turntable bearing and lubricate.
	(c) Bearing idler wheel (39) binding because clogged.	(c) Clean idler wheel bearing and lubricate.
	(d) The idler wheel is touching the front end of the next lower step of the motor pulley because lift-off lever (28) or idler wheel lever (32) bent.	(d) Straighten levers. The idler wheel should be in parallel with the chassies. Correct height adjustment of the idler wheel is obtained by turning the set-screw in coulisse (115) of the speed-setting mechanism. Tighten lock-nut.
	(e) Records skidding on each other because warped.	(e) Unsuitable records.
Distorted reproduction.	(a) Defect in amplifier.	(a) Check amplifier.
	(b) Defective cartridge.	(b) Replace cartridge.
	(c) Insufficient needle pressure.	(c) Turn needle pressure adjustment screw (14).
No output.	(a) Defective pick-up cartridge.	(a) Replace.
	(b) Broken wire.	(b) Check wiring and cable for interruption or short-circuit.
	(c) Defect in amplifier.	(c) Check amplifier.
Changer switches off too early.	(a) Shut-off control link (106) bent.	(a) Straighten.
Changer does not switch off after last record has been played.	(a) Control link (100) does not engage control lever (64) because spring (70) for control link unhooked.	(a) Hook spring.
	(b) The shaft of the record ballast arm is retained by the mounting panel (wrong installation).	(b) Correct opening.

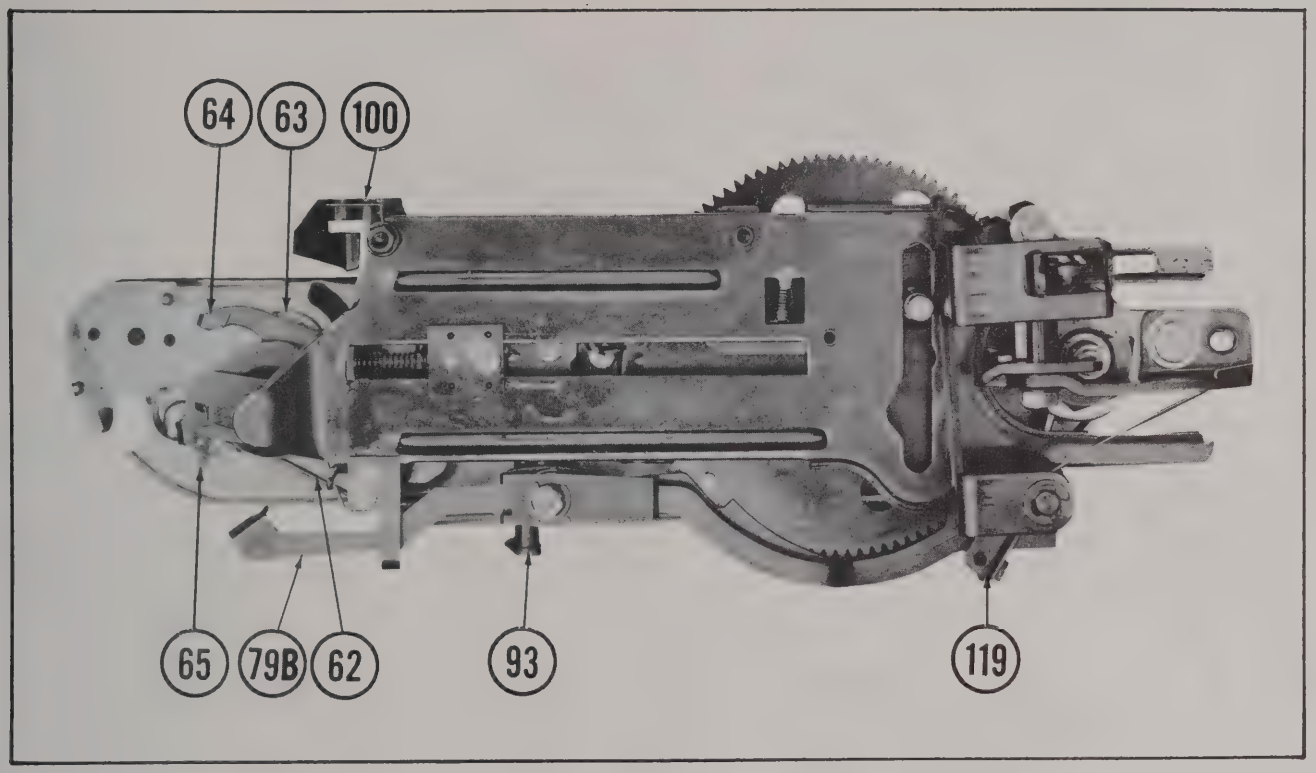


FIG. 6

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1		Pick-up Arm	31	7121665	Washer For Fastening Motor
2		Tension Spring	32		Idler Wheel Lever
3		Pick-up Arm Plate	33	7031723	Snap Ring
4	7030867	Cylindrical Head Screw	34	7142080	Record Ballast Arm
5	6822728	Hinge Pivot Screw	35		Felt Washer
6	6822723	Arresting Spring For Screw Adjusting Height of Pick-up Arm	36	6825257	Casing For Record Ballast Arm
			37	7031723	Snap Ring
7	7121990	Screw For Adjusting Height of Pick-up Arm	38	7121909	Washer
			39	7142090	Idler Wheel
8	7030294	Hex. Nut	40	6825255	Rubber Tire For Idler Wheel
9	8265663	Carrier Spring	41		Cartridge Assembly
10	7121436	Carrier Plate For Pick-up Arm	42	7142078	Lever With Rods
			42A		Starter Spring (Part of Item 42)
11	6822729	Pick-up Hinge Bracket			
12	7031723	Snap Ring	42B		Lift-off Spring (Part of Item 42)
13		Spring Fastener			
14		Needle Pressure Adjustment Screw	42C		Lever With Rod And Muting Switch
15	6825262	Pick-up Arm Pedestal Casing	42D		Spring
16	6821864	Pick-up Arm Rest	43		Speed Change Cam
17	6821830	Repeat Push Button	44	6825266	Plate Spring For Ball Locking
18	6821829	Filter Push Button	45	608144	Locking Ball
19	6821828	Off Push Button	46	7021230	Washer
20	6821827	On-Reject Push Button	47	7030896	Cylindrical Head Screw
21	6821889	Ornamental Frame	48	7142103	Push-Button Assembly
22	7142108	Speed-Setting Knob With Axle	49		Rod Linkage For Speed Setting Mechanism
23	7031872	Snap Ring			
24	6825267	Turntable Cover	50		Rod Linkage For Speed Setting Mechanism
25	7142088	Turntable			
26	7031305	Cylindrical Head Screw	51		Repeat Linkage Spring
27	7031884	Fan Shaped Washer	52	7021230	Washer Galvenized
28		Lift-off Lever	53	7031750	Spring Washer
29	7030896	Cylindrical Head Screw	54	7030896	Cylindrical Head Screw
30	7031268	Cylindrical Head Screw	55	6821834	Conical Spiral Spring For 12"

MECHANICAL PARTS LIST (CON'T)

Ref. No.	Part No.	Description
		Record Selector
56	7121450	12" Record Selector
57	703	Snap Ring
58	7031723	Snap Ring
59		Lift Pin
60		Second Control Rod
61	7141985	Changer Heart Assembly Complete
62		Pick-up Arm Return Spring
63	6821839	Resetting Spring For Control Lever
64	7142083	Control Lever For Main Switch
65	7142081	Return Locator Plate For Pick-up Arm
66	7142079	Pick-up Arm Finger With Axle
67	6821826	Spring For Lift Pin
68	7031723	Snap Ring
69	7142075	Slide And Cam Assembly
70	6825239	Spring For Control Link
71	7021230	Washer
72	7030273	Hex. Nut
73		Stop Bracket
74	7030896	Cylindrical Head Screw
75	7021680	Roller For Slide And Cam Assembly
76		Return Spring Mounting Bracket
77	8265674	Return Spring For Slide And Cam Assembly
78	7030896	Cylindrical Head Screw
79	7142076	Clutch (Curved Starting Levers)
80	6825247	Changer Spindle Without Ball Bearing
81	6821818	Ball Bearing For Changer Spindle
82	7031872	Snap Ring
83	7121455	Washer For Main Gear
84		Hex. Nut For Mounting Spindle
85	6821866	Return Spring For 10" Record Touching Lever
86	6821815	Return Spring For Shut-off Lever
87	7022356	Reset Lever
88	7121451	10" Record Touching Lever
88A		Bumper For (88)
89		Washer
90	7030896	Cylindrical Head Screw
91		Set-back Cam
92	7030896	Cylindrical Head Screw
93	7142082	Shut-off Lever Assembly
94	7142074	Main Gear
94A		Trip Pawl
94B		Bracket On Main Gear
95		Shut-off Lever Mounting Plate
96	7030896	Cylindrical
97		Shut-off Lever Mounting Plate
98		Stud For Curved Starting Lever
99	7031723	Snap Ring
100	7121867	Control Link
101		Stud For Control Link
102	6825251	Tension Spring For Idler Wheel
103	7141985	Bearing And Guide Angle Iron
104		Part of Item (103)
105	6825258	Tension Spring For Shut-off Control Link
106	7121690	Shut-off Control Link
107	7268193	60 Cycle Step Pulley With Spring For Motor
108	6825234	Small Rubber Washer
109	6825235	Large Rubber Washer
110	7121665	Washer
111	7021644	Spacer For Fastening Motor
112	K3/110V	Motor Assembly Complete 110 Volts Only, Without Step Pulley
113	7031818	Spring Washer
114	7030285	Hex. Nut
115	7142089	Three Speed Changing Device
116	7141780	Ejector Link Pawl
117		Washer
118		Screw
119		Stop Bracket For Trip Link
120		Washer
121	7030896	Cylindrical Head Screw
122		Swivel Lever
123	7031827	Snap Ring
124	7031818	Spring Washer
125	7030285	Hex. Nut
126	7031941	Clamping Ring
127		Compression Spring
128		Washer
129	7121671	Guide Pilot For Axle/ Record Ballast Arm
130	7030291	Hex Nut
131	6821887	Clamping Spring For Mounting Chassis
132	6825252	Snap Ring

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

TRAV-LER MODELS 1700, 1710, U (Ch. 72916, 73016)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER COLORADO

MODEL 1710 (Ch. 72916)

TRAV-LER MODELS 1700, 1710, U
(Ch. 72916, 73016)

TRADE NAME	Trav-Ler	Models	Chassis
		1700, 1710	72916
		1710U	73016
MANUFACTURER	Trav-Ler Radio & Television Corp., 571 West Jackson Blvd., Chicago 6, Illinois		
TYPE SET	Television Receiver		
TUBES	Thirteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING 140 Watts, 1.2 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13VHF, 14 thru 83UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 15
Parts List and Descriptions 12, 13
Photographs
Cabinet-Rear View 15
Capacitor & Alignment Identification 4, 9
Chassis-Top View 11
Photographs (Cont.)
Resistor & Inductor Identification 5, 8
Resistance Measurements 10
Servicing in the Field 1
Schematic (Alternate Tuner) 14
Schematic (TV) 2
Tube Failure Check Chart 3
Tube Placement Chart (Bottom View) 10
Tube Placement Chart (Top View) 3

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

DATE 9-57 SET 371 FOLDER 13

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push on type control knobs from the side.
2. Remove 8 metal screws and the rear cover.
3. Remove 2 speaker leads.
4. Remove 4 metal screws and remove the top of the cabinet by sliding back and lifting up.
5. Remove the picture tube socket, yoke plug and HV lead.
6. Remove the 2 metal screws holding the chassis to the sides of the cabinet.
7. Remove 2 chassis bolts from the bottom.
8. Remove the chassis.
9. Remove 2 speaker nuts and the speaker.

MODEL 1710 (Ch. 72916)

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODELS	CHASSIS
1700, 1710	72916
1710U	73016

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube, and safety glass cleaning, it is necessary to remove the chassis. (See disassembly instructions.)

FOCUS

Adjust the Ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the Horizontal Frequency slug B1 until the picture synchronizes horizontally. (For location see tube placement chart.)

FUSES

A 5.6Ω fusible resistor R66 is used for LV power supply protection. (For location see tube placement chart.)

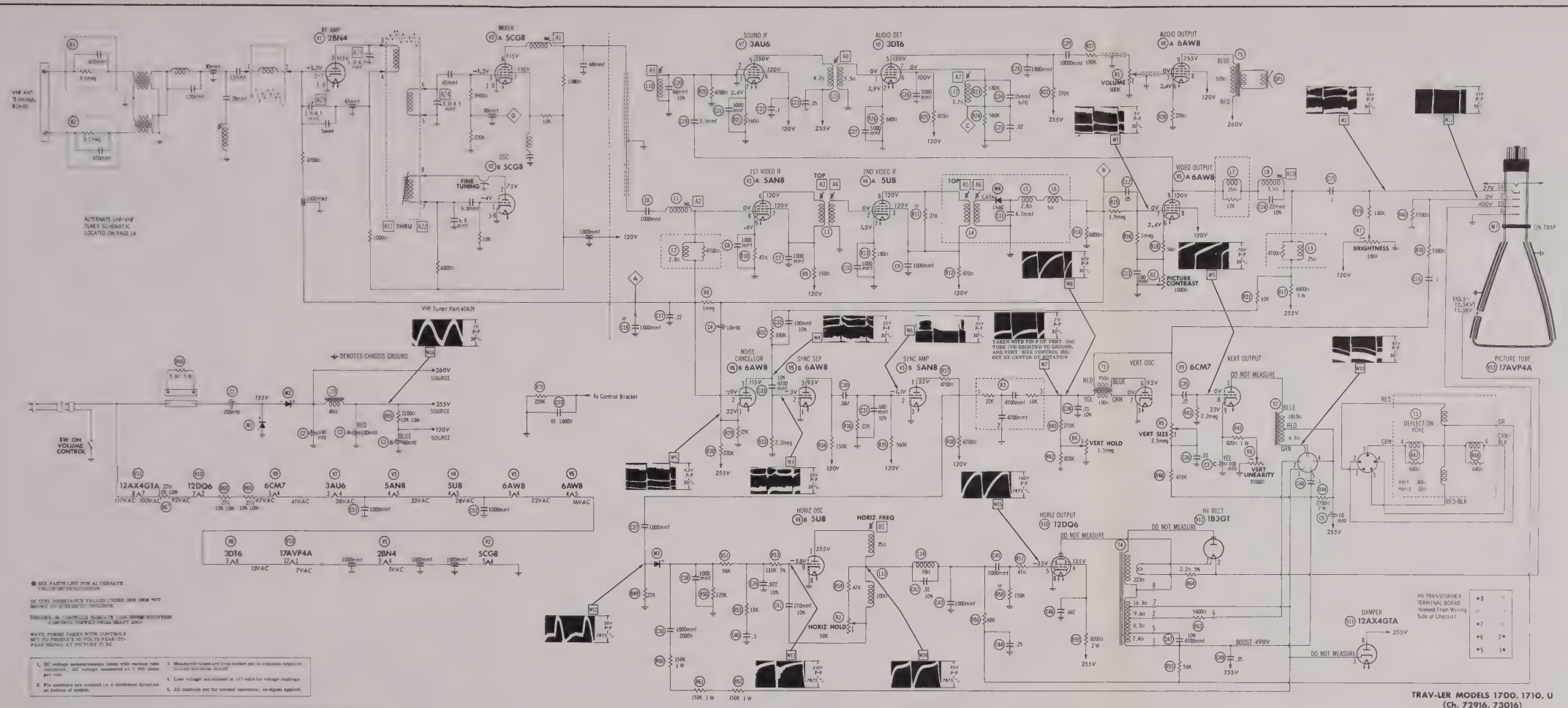
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

TRAV-LER MODELS 1700, 1710, U
(Ch. 72916, 73016)

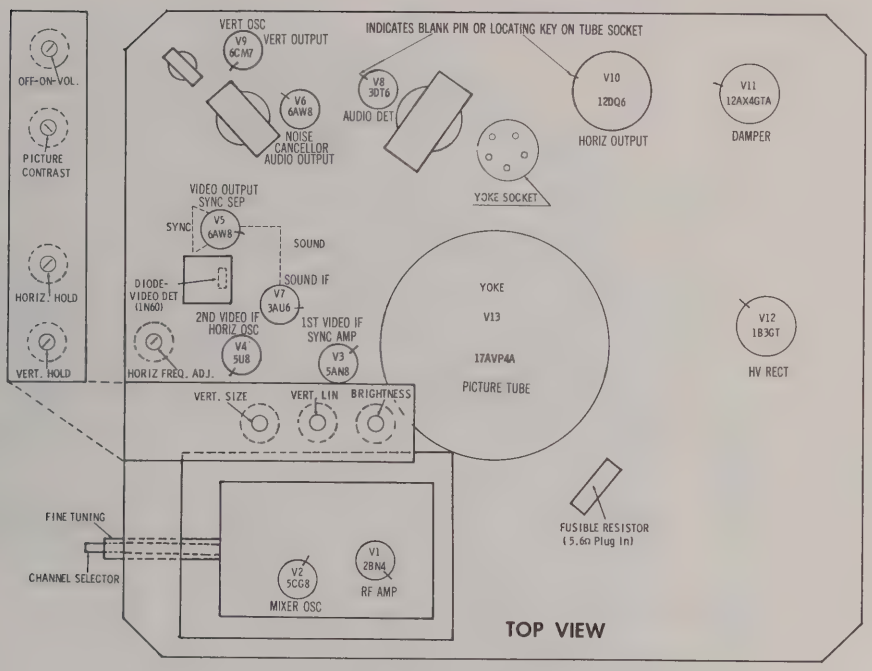
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America


RF AMP V1 2BN4
MIXER V2 A 5CG8
OSC V2 B 5CG8
SOUND IF V7 3AU6
AUDIO DET V8 3DT6
AUDIO OUTPUT V6 A 6AW8
1ST VIDEO IF V3 A 5AN8
2ND VIDEO IF V4 A 5U8
VIDEO OUTPUT V5 A 6AW8
NOISE CANCELLER V6 B 6AW8
SYNC SEP V5 B 6AW8
SYNC AMP V3 B 5AN8
VERT OSC V1 6CM7
VERT OUTPUT V9 6CM7
HORIZ OSC V4 B 5U8
HORIZ OUTPUT V10 12DQ6
HV RECT V12 1B3GT
DAMPER V11 12AX4GTA
PICTURE TUBE V13 17AVP4A
VHF ANT TERMINAL BOARD
ALTERNATE UHF-VHF TUNER SCHEMATIC LOCATED ON PAGE 14
VHF Tuner Part #1A29
FINE TUNING
THRU
TOP
VOLUME 500K
BRIGHTNESS 100K
PICTURE CONTRAST 10000
VERT SIZE 2.5meg
VERT LINEARITY
VERT HOLD 1.5meg
HORIZ HOLD 50K
BOOST 490V
DEFLECTION YOKE
HV TRANSFORMER TERMINAL BOARD Viewed From Wiring Side of Chassis
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
To Control Bracket
DO NOT MEASURE
12AX4GTA 270 8A7 177VAC
12DQ6 7A2 105VAC
6CM7 5A1 92VAC
3AU6 3A4 41VAC
5AN8 4A5 38VAC
5U8 4A5 33VAC
6AW8 5A8 28VAC
6AW8 4A5 22VAC
3DT6 3A4 16VAC
17AVP4A 12A1 13VAC
2BN4 3A4 7VAC
5CG8 5A8 5VAC
260V SOURCE
255V SOURCE
120V SOURCE
SEE PARTS LIST FOR ALTERNATE
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT
CONTROL VIEWED FROM SHAFT END
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative (cathode-filament, shield)
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957
TRAV-LER MODELS 1700, 1710, U
(Ch. 72916, 73016)

TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

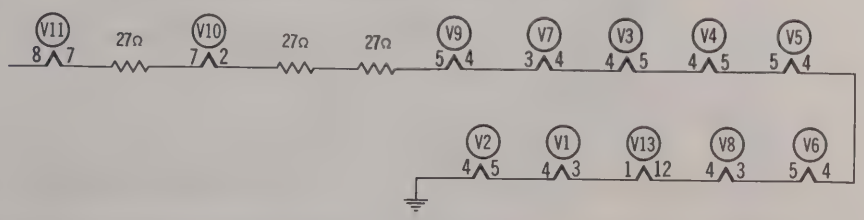
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R66), Rectifier (M1, M2)**

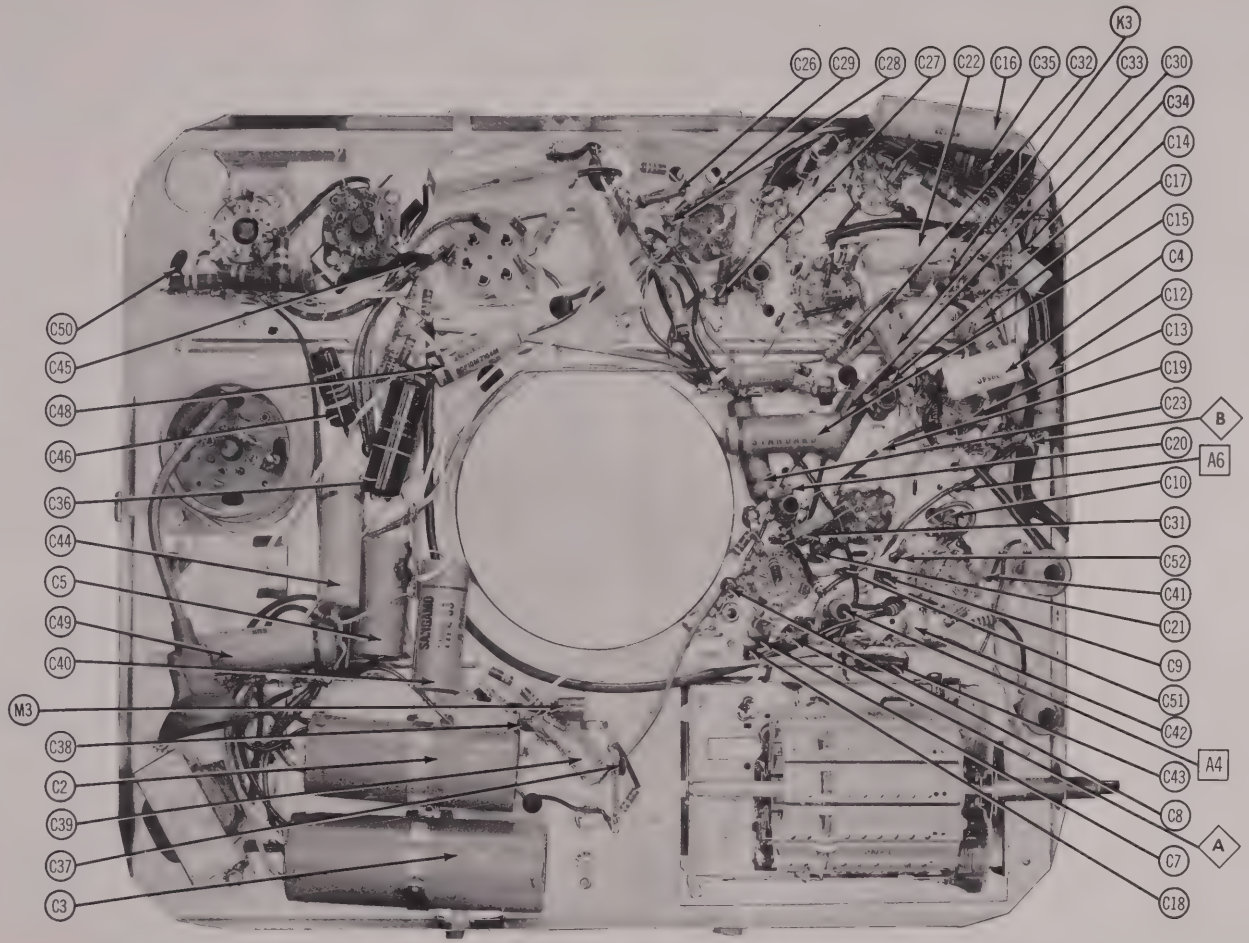
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, Diode (M4), V5**
No pic, no sound, has snow - **V1, V2**
No pic, has sound, has raster - **V5, V13**
Has pic, no sound - **V7, V8, V6**

SYNC FAILURE
No vert. sync - **V6, V5, V3**
No horiz. sync - **V6, V5, V3, Diode (M3)**
No vert. or horiz. sync - **V6, V5, V3**

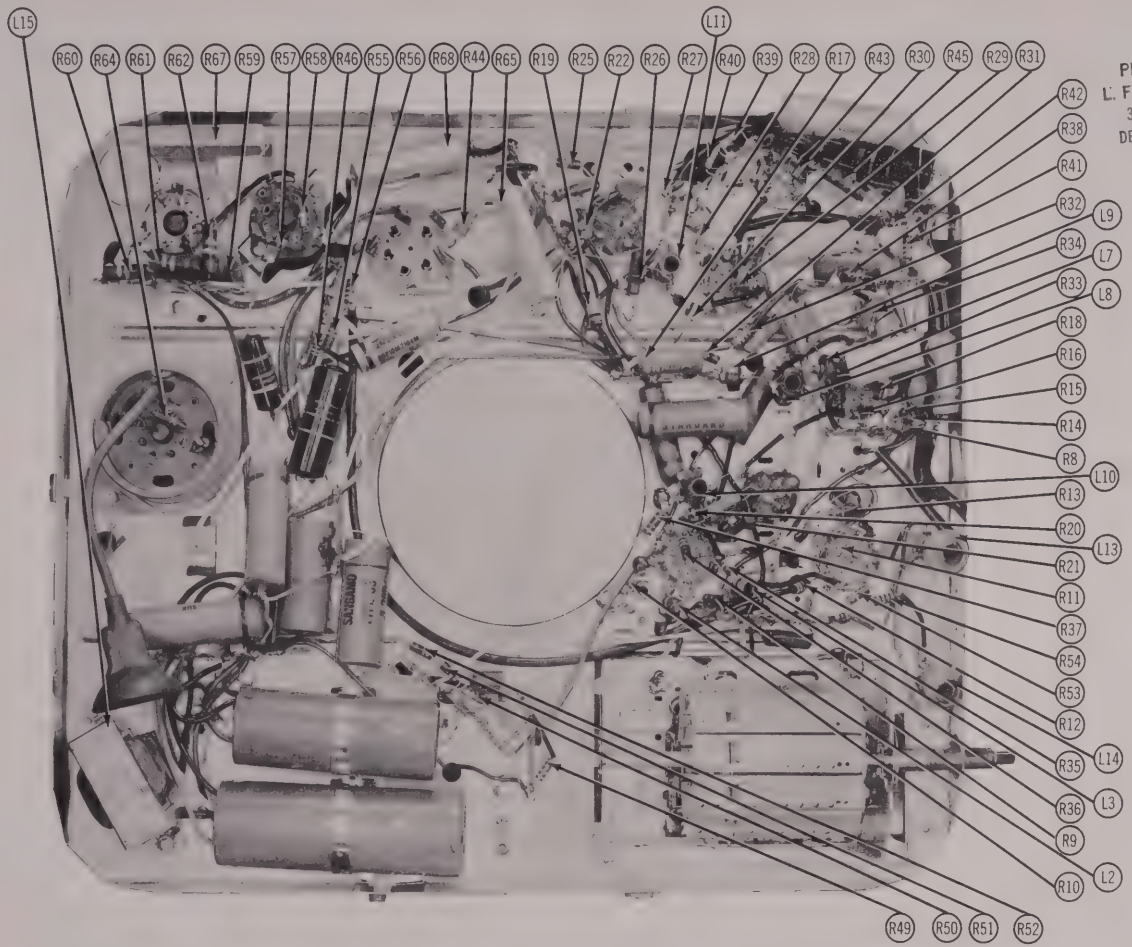
SWEEP FAILURE
No raster, has sound - **M3, V4, V10, V11, V12, V13**
No vertical deflection - **V9**
Poor vert. linearity or foldover - **V9**
Poor horiz. linearity or foldover - **V4, V10, V11**
Narrow picture - **V4, V10, V11, M1, M2**
Vert. off freq. - **V9**
Horiz. off freq. - **V4**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below.)





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Set picture contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V2). Low side to chassis.	44. 0MC (10MC Swp.)	41. 25MC 45. 75MC	12	Vert amp. thru 10K to point (B). Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. The High frequency side of the curve is controlled by adjusting A2 and A3. The Low frequency side of the curve is controlled by adjusting A1 and A4. The Top of the curve is controlled by adjusting A5 & A6.

SOUND IF ALIGNMENT

1. Tune in a strong TV signal and adjust A7 for maximum undistorted sound output. If two peaks occur during this adjustment, connect the DC probe of a VTVM to point (C) and common to chassis. Adjust for the peak producing the highest deflection on the VTVM.
2. Reduce the signal strength applied to the receiver (by disconnecting the antenna or connecting an attenuator in series with the antenna) until noise is heard in the sound.
3. Adjust A8 and A9 for maximum undistorted sound output.
4. Reduce the signal strength still further and retouch A8 and A9 for maximum undistorted sound output.
5. If necessary, repeat steps 1 through 4.

4.5MC TRAP ALIGNMENT

Tune in a TV station and advance the picture contrast control. Adjust A10 for MINIMUM 4. 5MC beat interference pattern in the picture.

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the center of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213 MC (10MC Swp)	211. 25MC 215. 75MC	13	Vert. Amp. thru 47K to point (B). Low side to chassis.	A11	Adjust to place sound marker in trap notch as in Fig. 2. Video marker should fall at 50%.
			207MC (10MC Swp)	205. 25MC 209. 75MC	12		A12	
			201MC (10MC Swp)	199. 25MC 203. 75MC	11		A13	
			195MC (10MC Swp)	193. 25MC 197. 75MC	10		A14	
			189MC (10MC Swp)	187. 25MC 191. 75MC	9		A15	
			183MC (10MC Swp)	181. 25MC 185. 75MC	8		A16	
			177MC (10MC Swp)	175. 25MC 179. 75MC	7		A17	
			85MC (10MC Swp)	83. 25MC 87. 75MC	6		A18	
			79MC (10MC Swp)	77. 25MC 81. 75MC	5		A19	
			69MC (10MC Swp)	67. 25MC 71. 75MC	4		A20	
			63MC (10MC Swp)	61. 25MC 65. 75MC	3		A21	
			57MC (10MC Swp)	55. 25MC 59. 75MC	2		A22	

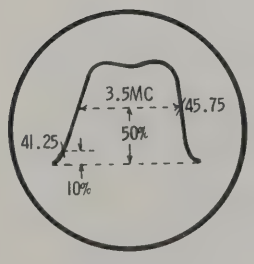


FIG. 1

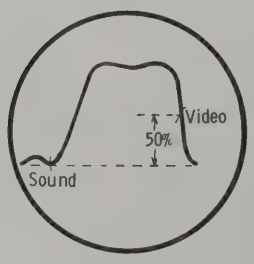


FIG. 2

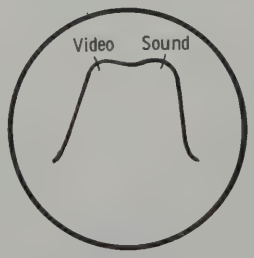


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193. 25MC 197. 75MC	10	Vert. Amp. thru 10K to point ⓓ. Low side to chassis.	A23, A24	Adjust A23 and A24 for response similar to Fig. 3 with markers on shoulders of curve.
4.	"	"	"	"	"	"	A25	Adjust for MINIMUM amplitude on scope.
5.	"	"	213MC (10MC Swp)	211. 25MC 215. 75MC	13	"		Check for response similar to Fig. 3. If markers fall below 70% on any channel, make compromise adjustment of A23 and A24 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC (10MC Swp)	205. 25MC 209. 75MC	12			
			201MC (10MC Swp)	199. 25MC 203. 75MC	11			
			189MC (10MC Swp)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp)	77. 25MC 81. 75MC	5			
			69MC (10MC Swp)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp)	55. 25MC 59. 75MC	2			

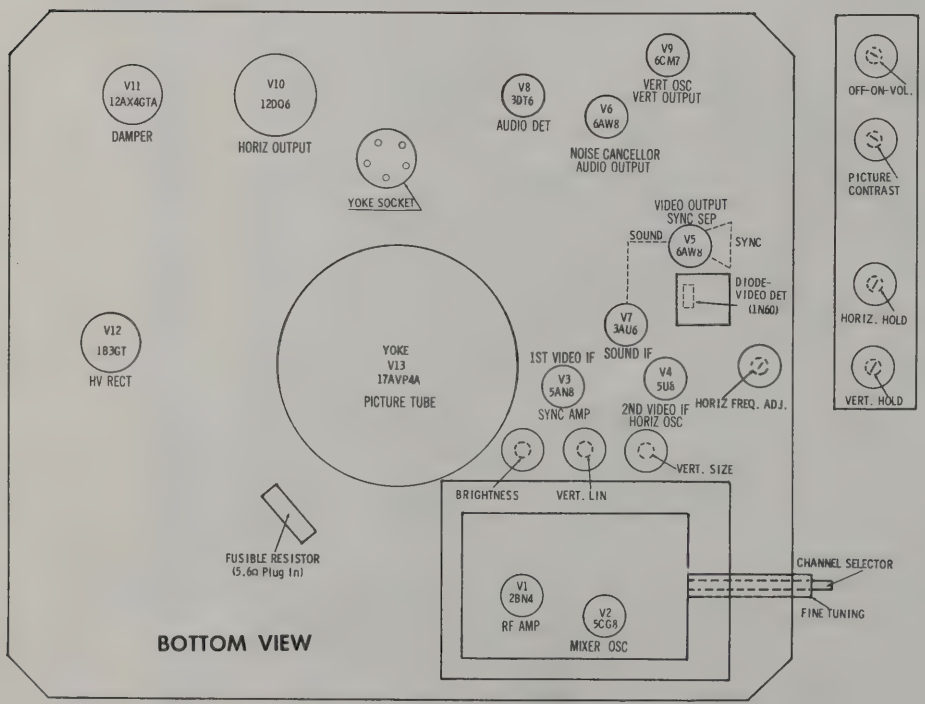
UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	2BN4	0Ω	1Meg	1.5Ω	1Ω	† 3100Ω	0Ω	1Meg		
V2	5CG8	10K	† 8900Ω	0Ω	0Ω	1Ω	† 3100Ω	† 12K	0Ω	220K
V3	5AN8	† 11.5K	22K	0Ω	9.5Ω	8.5Ω	† 2300Ω	† 2300Ω	1Meg	47Ω
V4	5U8	‡125K	.1Ω	† 2600Ω	8.5Ω	7.5Ω	† 2600Ω	180Ω	0Ω	200K
V5	6AW8	0Ω	2.2Meg	† 150K	5.5Ω	7.5Ω	• 210Ω	750K	† 2100Ω	† 6800Ω
V6	6AW8	17K	1Meg	† 350K	5.5Ω	4Ω	220Ω	0Ω	† 2100Ω	† 520Ω
V7	3AU6	.9Ω	0Ω	10.5Ω	9.5Ω	† 49Ω	† 2100Ω	560Ω		
V8	3DT6	5.5Ω	680Ω	4Ω	3.5Ω	† 270K	† 2600Ω	560K		
V9	6CM7	‡4500Ω	NC	0Ω	10.5Ω	12Ω	• ‡1.6Meg	• 480K	• 2.5Meg	• 2100Ω
V10	12DQ6	NC	66Ω	TP	† 8200Ω	150K	NC	68Ω	0Ω	TOP CAP ‡15Ω
V11	12AX4GTA	NC	NC	¶	NC	† 49Ω	NC	95Ω	98Ω	
V12	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡ 239Ω
V13	17AVP4A	1.5Ω	2700Ω	PIN 6 0Ω	PIN 10 ‡56K	PIN 11 • 120K	PIN 12 3.5Ω			

† MEASURED FROM OUTPUT OF M2.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
‡ MEASURED FROM PIN 3 OF V11.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
NC NO CONNECTION.
TP TIE POINT



TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE St.
DENVER, COLORADO

CHASSIS TOP VIEW

TRAV-LER MODELS 1700, 1710, U
(Ch. 72916, 73016)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	R.F. Amplifier	2BN4	
V2	Mixer/Oscillator	5CG8	
V3	1st. Video IF Amp - Sync Amp	9AN8	
V4	2nd Video IF Amp - Noise Cancellor	9U8	
V5	Video Output-Sync Sep	6AW8	
V6	Noise Cancellor	6AW8	
V7	Sound IF Amp	3AL6	
V8	Audio Det	3DT6	
V9	Vert. Osc. Vert. Out. Output	6CM7	
V10	Horiz. Output	12DQ8	
V11	Damper	12AX4GTA	
V12	HV Rectifier	1B3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	TRAV-LER PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V13	17AVP4A	17AVP4A ①	17AVP4A ② 17AT4PAA, 17AVP14A ③ 17AVP4	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT	TRAV-LER PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No	NOTES
C1	300	150	EC-54	PRJ-100	BR20015	WS342	TD-200-150	S-110	TVA-1423	
C2	140	100	EC-55	PRJ-100	BO280	WS427		D-177	TVA-1378	
C3 A	100	300	EC-56	PRJ-047	CO044	WT430		Q-221	R3540 *	
B	80	300			BRJ005			MT-4550		
C	100	50								
C4	10	75	EC-51	PRS150V10	BBR10-90	TC42	TD-10-150	FM-1510	TVA-1408	
C5	10	300	EC-57	PRS350V10	BRJ045	TC52	TD-10-350	FM-4510	TVA-1604	

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP	RATING VOLT	TRAV-LER PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C6	1000		CC-52	BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	
C7	1000		CC-53	BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	
C8	1000		CC-52	BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	
C9	1000		CC-52	BPD-001	DD 102	BYA8DA	ED-1000	DC52L	5HK-D1	
C10	1000			BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	
C11	4.7			NPO-SI 4.7	TCZ-4R7	C9V47C	TCC-4.7	ZT-5547	5TCCB-V47	
C12	05	200		BPD-05	DF-503	CUB2F5		GEM-316	2TM-D5	
C13	100			SI 100	D6-101	LT5T1	GP-100	UC-581	5GA-T1	
C14	22			NPO-SI 22	D6-220	L10G22	ED-33		5TCCB-V220	10%
C15	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C16	1	600		P888N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C17	2	200		P288N-22	DF-102	CUB2P22		GEM-2022	2TM-P22	
C18	1000			BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	Note 1
C19	1			NPO-SI 1 3	TCZ-1R3	C9V13C	TCC-1.3	ZT-5533	5TCCB-V33	
C20	68			NPO-SI 68	D6-680	L10G68	TCC-68			10%
C21	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-535	5GA-D6	
C22	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C23	05	400		BPD-05	DF-503	CUB4E5		GEM-415	4TM-S5	
C24	15		CC-48	NPO-SI 15	TCZ-15	C9G15C	TCC-15		5TCC-Q5	NPO
C25	02	200		BPD-02	DF-308	CUB2E3	ED-03	GEM-315	2TM-E2	
C26	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-535	5GA-D6	
C27	5000			SI 5000	D6-502	LT6D5	GP-5000	UC-525	5GA-D5	
C28	1000			BPD-001	DD-102	BYA8DA	KD-1000	DC52L	5HK-D1	
C29	1000			BPD-01	DD-103	BYA8E1	ED-01	DC51L	5EK-E1	
C30	047	200		BPD-05	DF-503	CUB2E47		GEM-2147	2TM-S47	
C31	680			1464-00068		1B3T68			M2-368	10%
C32	100			1469-0001		2B3T1			M2-S1	10%
C33	4700			1464-0047		1B3D47			M2-347	10%
C34	01	600	PC-29					GEM-1611		10%
C35	22	400	CC-54	P488N-22		CUB4P23		GEM-4022	4TM-P22	
C36	22	400	CC-54	P488N-22		CUB4P23		GEM-4022	4TM-P23	
C37	1000			BPD-001	DD-102	BYA8DI	ED-1000	DC52L	5HK-D1	
C38	1000			BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	
C39	022	400								10%
C40	5	200	PC-32	P288N-5		CUB2P5		GEM-205	2TM-P5	
C41	270		MO-22	1469-00027		1B3T27			M2-327	10%
C42	01	600	PC-29					GEM-1611		10%
C43	1000			1467-001	DD-102	5W5T1	GP-1000	UC-531	1TM-D1	
C44	25	600		P688N-25		CUB6P25		GEM-6025	6TM-P25	
C45	5000			BPD-005	DD-502	BYA8D5	ED-005	DC52L	5HK-D5	
C46	047	400		BPD-05	DF-503	CUB4E47		GEM-4147	4TM-S47	
C47	4700			1464-0047		1B3D47			M2-347	10%
C48	1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C49	25	600		P688N-25		CUB6P25		GEM-6025	6TM-P25	
C50	1000	2000		BVD-30-1000	DD50-102	BVB20A	HD3-1000	DC30L	20HKD-D1	
C51	1000			BPD-001	DD-102	BYA8DI	ED-1000	DC52L	5HK-D1	
C52	1000			BPD-001	DD-102	BYA8DA	ED-1000	DC52L	5HK-D1	
C53	01	1600	PC-33C	P1688N-01	DD16-103	CUB1601		GEM-1611	16TM-S1	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	1	VC-80	B-80	A47-500K-Z	QJ1-123	U48	Volume
B	Shaft			Not Req.	ES8-3	Not Req.	Not Req.	
C	Switch			KB-1	SWK-12	TS-1	TS-26	
R2A	1000Ω	1	VC-82	B-5	A47-1000-B	QJ1-108	TA15L	Picture Contrast
B	Shaft			Not Req.	ES8-3	Not Req.	Not Req.	
R3A	50K	½	VC-83	B-51	A47-50K-B	QJ1-133	TA54L	Horiz. Hold
B	Shaft			Not Req.	ES8-3	Not Req.	Not Req.	
R4A	1.5Meg	1	VC-81	B-742	A47-1.5Meg-C	QJ1-158	TA15L	Vert Hold
B	Shaft			Not Req.	ES8-3	Not Req.	Not Req.	
R5A	2.5Meg	½	VC-78	AB-83	A47-2.5Meg-B	QJ1-339	SU-586	Vert Size
B	Shaft			AK-10	RN-5	TQ	Not Req.	
R6A	500Ω	½	VC-85	AB-10	A47-500Ω-B	QJ1-114		Vert Lin.
B	Shaft			AK-11	RN-2	TQ		
R7A	100K	1	VC-84	AB-49	A47-100K-B	QJ1-128	PTA15L	Brightness
B	Shaft			AK-19	RN-3	TQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA TRAV-LER PART No.	IRC PART No.	NOTES
R8	1Meg				
R9	150Ω				
R10	47Ω			BTS-47	
R11	27K			BTS-27K	Note 1
R12	470Ω				
R13	180Ω			BTS-180	
R14	6800Ω			BTS-6800	
R15	3.9Meg			BTS-3.9Meg	
R16	1Meg			BTS-1Meg	
R17	6800Ω	5			
R18	56Ω			BTS-56	
R19	100K			BTS-100K	
R20	4700Ω			BTS-4700	
R21	560Ω			BTS-560	
R22	270K			BTS-270K	
R23	180K			BTS-180K	
R24	560K			BTS-560K	
R25	470Ω			BTS-470	
R26	680Ω			BTS-680	
R27	100K			BTS-100K	
R28	220Ω			BTS-220	
R29	22K			BTS-22K	
R30	220K			BTS-220K	
R31	10K			BTS-10K	
R32	330K			BTS-330K	
R33	2.2Meg			BTS-2.2Meg	
R34	150K	1/3		BTS-150K	
R35	560K			BTS-560K	
R36	22K			BTS-22K	
R37	4700Ω			BTS-4700	
R38	47000Ω			BTS-4700	
R39	3300Ω			BTS-3300	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA TRAV-LER PART No.	IRC PART No.	NOTES
R40	2700Ω			BTS-2700	
R41	3300			BTS-3700	
R42	820K			BTS-820K	
R43	2.2Meg			BTS-2.2Meg	
R44	2700Ω	2		BTS-2700	
R45	820Ω	1		BTA-820	
R46	470K			BTS-470K	
R47	680Ω				
R48	680Ω				
R49	22K				
R50	130K			BTS-130K	
R51	56K				
R53	10K				
R53	110K 5%		IR-147		
R54	47K				
R55	56K				
R56	68K				
R57	47Ω			BTS-47	
R58	150K			BTS-150K	Note 2
R59	8200Ω	2		BTB-8200	
R60	150K	1		BTA-150K	
R61	150K	1		BTA-150K	
R62	150K	1		BTA-150K	
R63	5600Ω				
R64	2.2Ω 5%				
R65	3100Ω 10%	10	WR-28		
R66	5.6Ω	5	F-5-1	FR5.6	
R67	27Ω 10%	10	WR-28		
R68	27Ω 10%	10	WR-28		
R69	27Ω 10%	10	WR-28		
R70	220K				

Note 1. Some versions may use a 10K in this application.
Note 2. Some versions may use a 180K in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA TRAV-LER PART No.	Hallderson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert Osc.	TR-23	B6702 ①	A-3003 ①	309T1 ①	V405 ①	A-8125 ①	26A03 ①	A-97X ①
T2	Vert Output	TR-25	S1808 ②	A-3039 ②	328T1 ②	V312 ②	A-814 ②	26B54 ②	A-104X ②
T3A	Yoke- Horiz. (21MH)	L-51	DF507 ③	MDF-92 ③	235D1 ③	T30F10/43 ③	DY-16A ③	Y-15 ③	Y-41 & NW6 ③
B	(90°)- Vert. (40MH)		③	③	③	③	③	③	
T4	Horiz. Output	TR-24							

① Drill new mounting holes.
② Use original yoke damping network.
③ Use original rear cover and centering device. Mount with leads out bottom and connect same as original.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRAV-LER PART No.	Hallderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	18K	3-4Ω	AT-18	Z1118	A-3934	A-3881	34S54	S-51X ①	① Tape center tap on primary winding.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRAV-LER PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA TRAV-LER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	1st. Video IF	L-82		TV-151	6235	22 Microhenries; wound on 4700Ω Resistor
L3	RF Choke	L-96	19-5023 *		6155	
L3	2nd. Video IF	L-85				
L4	3rd. Video IF	L-84		TV-1320 ▲	6319 ▲	Includes M4
L5	RF Choke	L-95	19-1005	BC-560	4612	9.3 Microhenries
L6	Series Peaking Coil	L-87	19-7000	TV-180	6173	65 Microhenries
L7	Series Peaking Coil	L-88A	19-3500 *	TV-180 *	6138 *	475 Microhenries; wound on 12K Resistor
L8	4.5MC Trap	L-89	20-1004	TV-151	1470	
L9	Shunt Peaking Coil	L-88	19-5100 ▲		6157 *	1075 Microhenries; wound on 4700Ω Resistor
L10	1st. Sound IF	L-90	17-3400		1469	
L11	2nd. Sound IF	L-90A				
L12	Quadrature Coil	L-79	20-1005	TV-131	1460	

* Parallel with 4700Ω Resistor.
▲ Crystal Det. not included.

* Parallel with 12K Resistor.
▲ Parallel with 82000 Resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRAV-LER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	NOTES
L13	135Ω *		L-93		TV-155	6213			HS-7	12.5-36 Millihenries Horiz. Frequency 4.8-10.5 Millihenries Horiz. Waveform
L14	70Ω		L-92			6214				

* Tapped @ 100Ω

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE 10 CURRENT 1000 (%)	REPLACEMENT DATA TRAV-LER PART No.	Hallderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L15	.210A	49Ω	1 Hy.	FC-5	C5037 ①	C-2974 ①	C-2326 ①	20C41	C-24X

① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRAV-LER PART No	REPLACEMENT DATA	
K1	Antenna Isolation	.3-1Meg, 470MMF	CC-56	Centralab	RC-471
K2	Antenna Isolation	.3-1Meg, 470MMF	CC-55	Centralab	RC-471
K3	Vertical Integrator	4700MMF, 4700MMF, 22K, 10K	CC-51	Aerovox Centralab Sprague	PA-383-2 PC-106 V-5

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA TRAV-LER PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	.210A	SR9 ①	1010 ①	1N1005 ②	RS250 ①	6S250 ①	250 ①	
M2	.210A	SR9 ①	1010 ①	1N1005 ②	RS250 ①	6S250 ①	250 ①	
M3		SR10 ①	1215 ①		1T1 ①			

① Selenium Type
② Germanium Type

CRYSTAL DIODES

ITEM No.	ORIG TYPE	REPLACEMENT DATA TRAV-LER PART No.	CBS PART No.	SYLVANIA PART No	NOTES
M4	1N60		1N60	1N60	Video Det. (Pigtail)

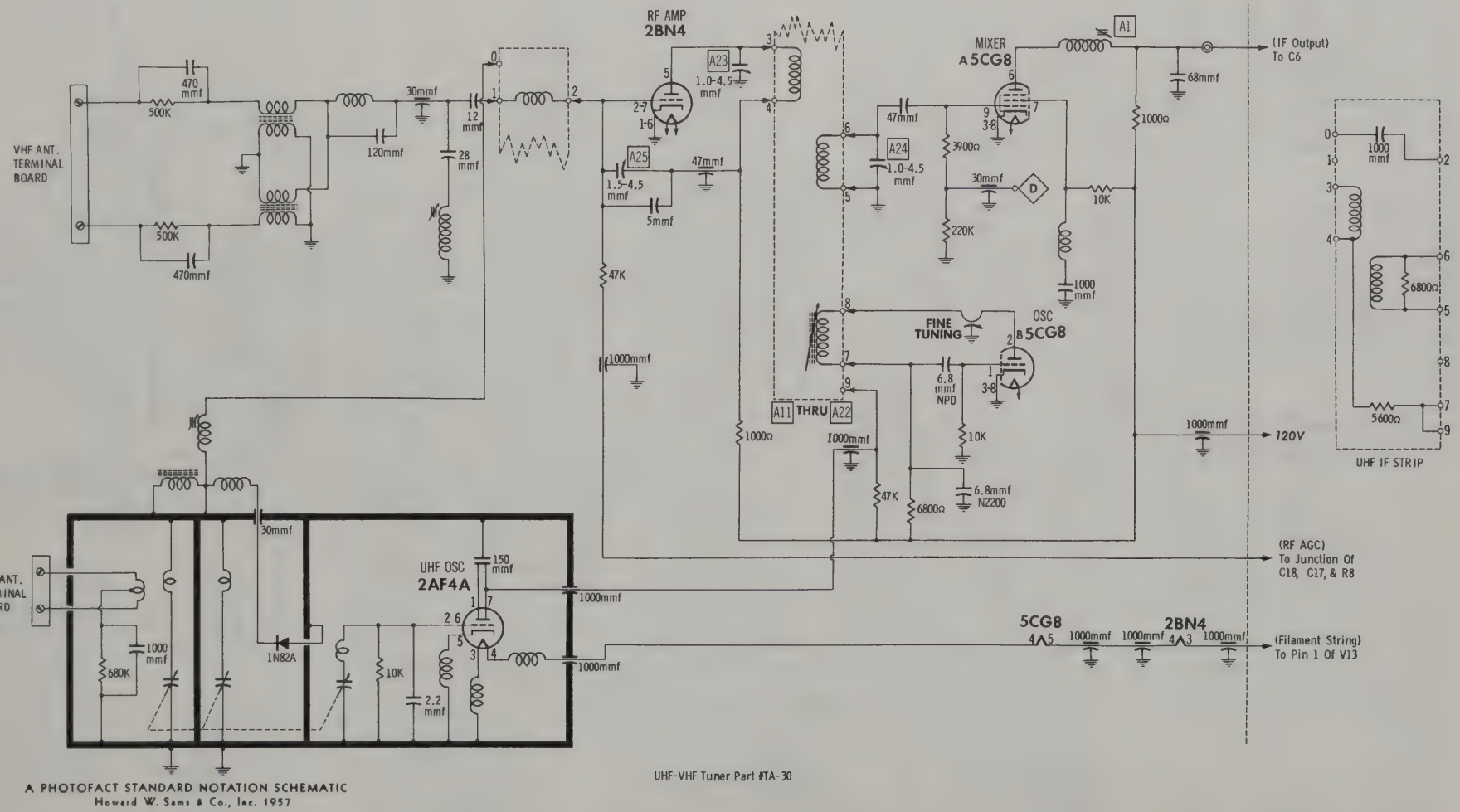
MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M5	Tuner	TA-39	VHF, Models: 1700, 1710
	Tuner	TA-30	UHF-VHF, Model: 1710U
M6	Centering Device		Includes Rear Yoke Cover
M7	Ion Trap		

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

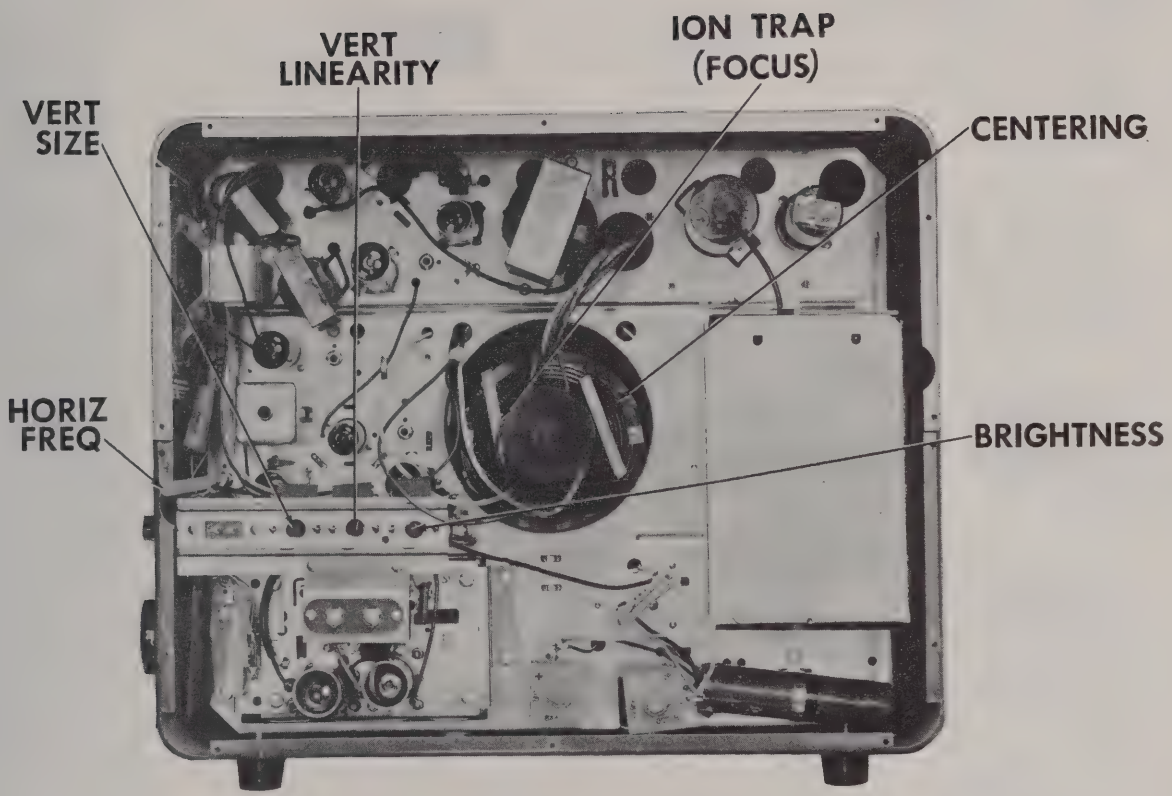
NAME	PART NO.	DESCRIPTION
Safety Glass	DW-95T	Tinted, Models: 1710, 1710U
Safety Glass	DW-95C	Clear, Model: 1700
Knobs	K-200	Channel Selector, Models: 1700, 1710
Knobs	K-190C	VHF Channel Selector, Model: 1710U
Knobs	K-191C	UHF Channel Selector, Model: 1710U
Knobs	K-201	Fine Tuning, Models: 1700, 1710
Knobs	K-189	Fine Tuning, Model: 1710U
Knobs	K-202	Control (4 used)



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

UHF-VHF Tuner Part #TA-30

ALTERNATE TUNER SCHEMATIC



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the Horizontal Frequency slug B1 until the picture synchronizes horizontally.

RETMA MEMBER

TRUETONE
MODELS D3784A, D3785A

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRUETONE
MODELS D3784A, D3785A

MODEL D3784A

TRUETONE
MODELS D3784A, D3785A

TRADE NAME	Truetone Models D3784A, D3785A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Missouri
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (Or) 7.5 Volts DC "A" Supply & 67.5 Volts DC "B" Supply.
RATING	.17 Amp. @ 117 Volts AC (Or) 60 MA @ 7.5 Volts DC & 9 MA @ 67.5 Volts DC (10 Watts)
TUNING RANGE—BROADCAST	535KC-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune to 1500KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC	"	A7	Check tracking. Adjust A7 if necessary.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H53

PARTS LIST AND DESCRIPTIONS

TRUETONE
MODEL D3784A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. -AVC-AF Amplifier	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	150-136	PRS150V5050	BBRD5515	TCD49	TDLD-9	MTD-1550	TVA-2453
B	50	150							
C2	175	15	150-137	PRS15V250	BBR175-15	TC1502		MTH-1525	R2420*

* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.05	200	152-104	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	3000		158-105	BPD-003	DD-302	BYA10D3	ED-003	UC-523	5GA-D3	
C5	220		156-111	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C6	2000		158-103	BPD-002	DD-202	BYA10D2	ED-002	UC-522	5GA-D2	
C7	2000		158-103	BPD-002	DD-202	BYA10D2	ED-002	UC-522	5GA-D2	
C8	.1	200	156-122	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C9	.1	200	156-122	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	①
C10	.1	400	152-108	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C11	.05	400	152-109	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	

① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	1/4	120-133					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	100K		180-116	BTS-100K	
R3	3.3Meg		180-137	BTS-3.3Meg	
R4	3.3Meg		180-137	BTS-3.3Meg	
R5	6.8Meg		180-135	BTS-6.8Meg	
R6	680Ω		180-140	BTS-680	

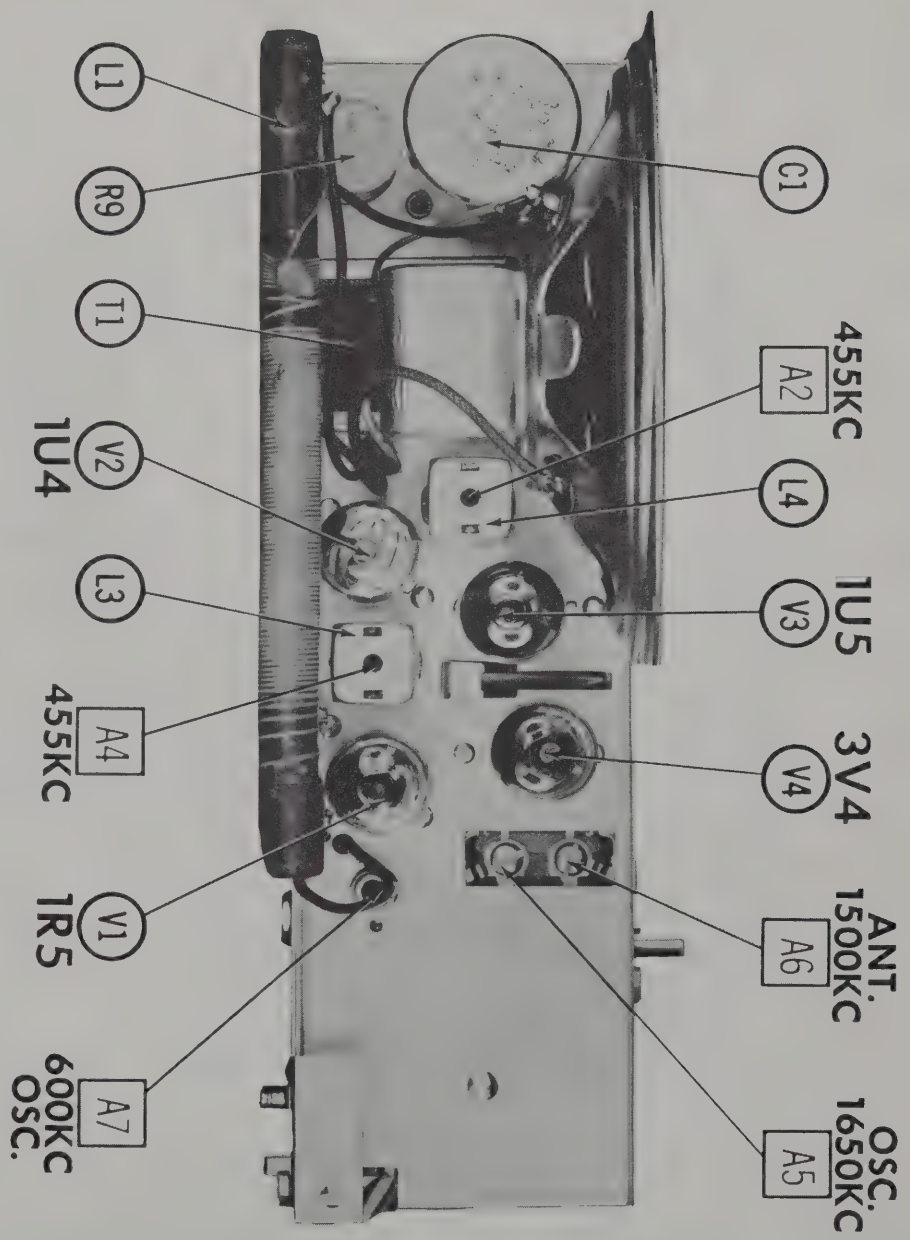
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R7	680Ω		180-140	BTS-680	
R8	1000Ω 5%		180-142	BTS-1000 5%	
R9	2500Ω	10	270-110	PW10-2500	
R10	6800Ω	1		BTA-6800	Note #1.
R11	33Ω	1	180-127	BTA-33	

Note 1. Some versions may use 2700Ω 1 W (Part #180-139).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	10.5K	3-4Ω	138-125		A-2927		24S84	S-11X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	175-129	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	132-135		BC-419		
L2	Osc. Coil	136-134		BC-401		
L3	Input IF	130-117	16-6800	BC-348	10-C1	
L4	Output IF	130-117	16-6801	BC-349	10-C2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	5000MMF, 5000MMF, 100MMF 4.7Meg, 1Meg, 2.2Meg	166-110	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-117 PC-91 114TM2 1407-03 P-2

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.059A	265-103	1003A	RS075	6S75	75	

BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M2	7.5V	3B6160	C5		717		M-9		9		
M3	67.5V	3B6257		P45		477		M-211P		211P	

MISCELLANEOUS

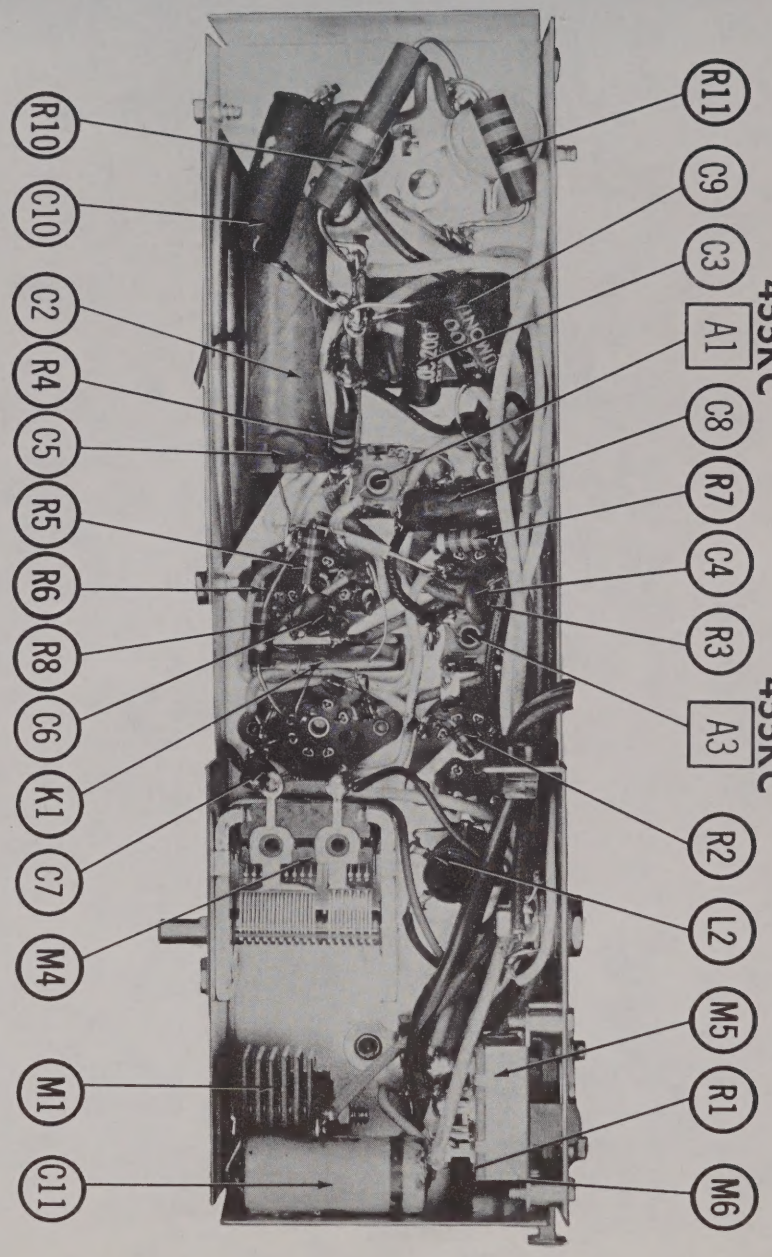
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Tuning Cap.	160-121	2 Gang (Ant. 10-235MMF, Osc. 10-110MMF).
M5	Switch	125-119A	Power Change-Over-Slide Type (DPDT).
M6	Switch	125-119A	Power Change-Over-Slide Type (DPDT).

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	220-138	On-Off-Volume (Ivory)
Knob	220-137	Tuning (Clear)
Knob	220-145	Tuning (Ebony)
Cabinet	210-128	Suntan Or Red (Specify Color)

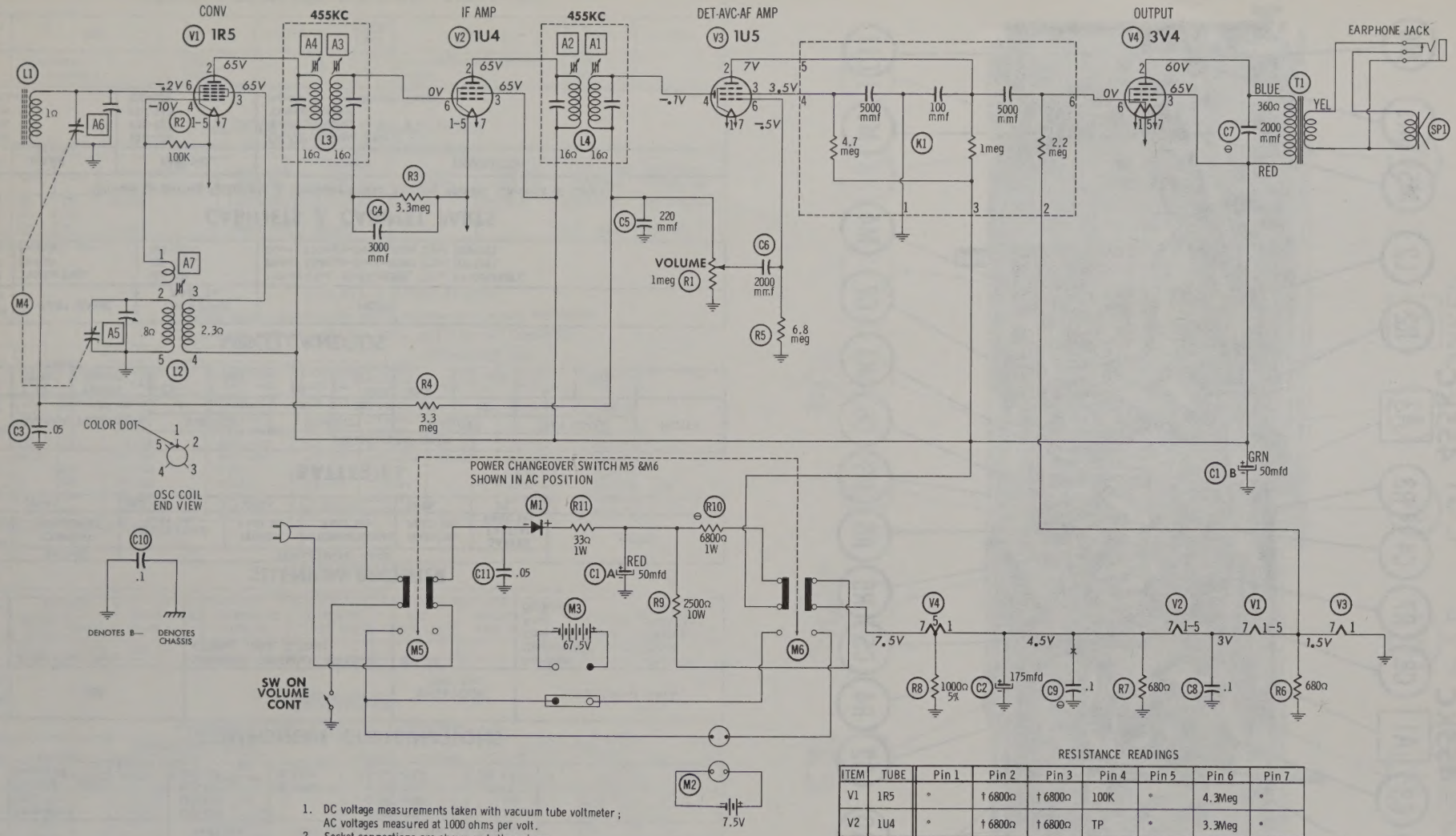
CHASSIS—BOTTOM VIEW



SET 371 FOLDER 14

TRUETONE MODEL D3784A

TRUETONE MODEL D3784A



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†6800Ω	†6800Ω	100K	*	4.3Meg	*
V2	1U4	*	†6800Ω	†6800Ω	TP	*	3.3Meg	*
V3	1U5	*	†1Meg	†4.7Meg	1Meg	TP	6.8Meg	*
V4	3V4	*	†7200Ω	†6800Ω	NC	*	2.2Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM POSITIVE SIDE OF C1A.
NC NO CONNECTION.
TP TIE POINT.

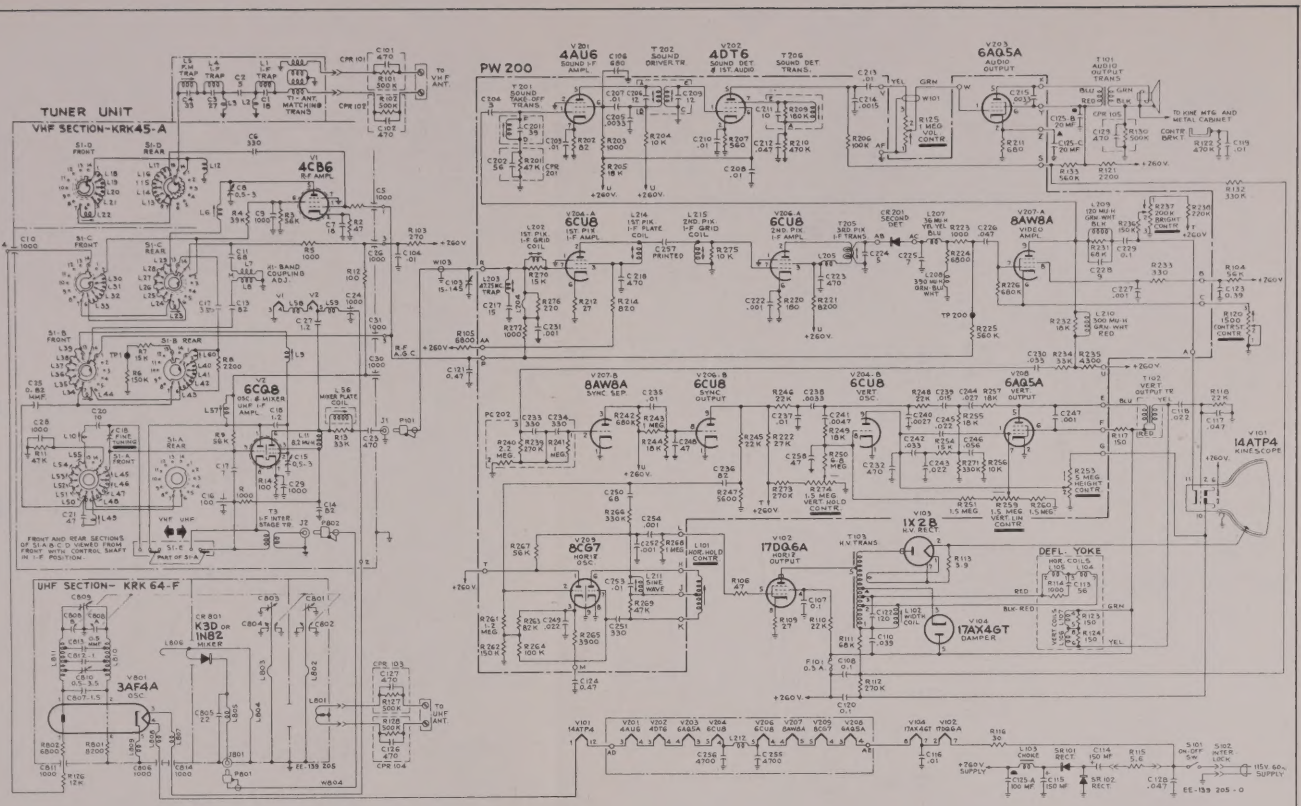
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

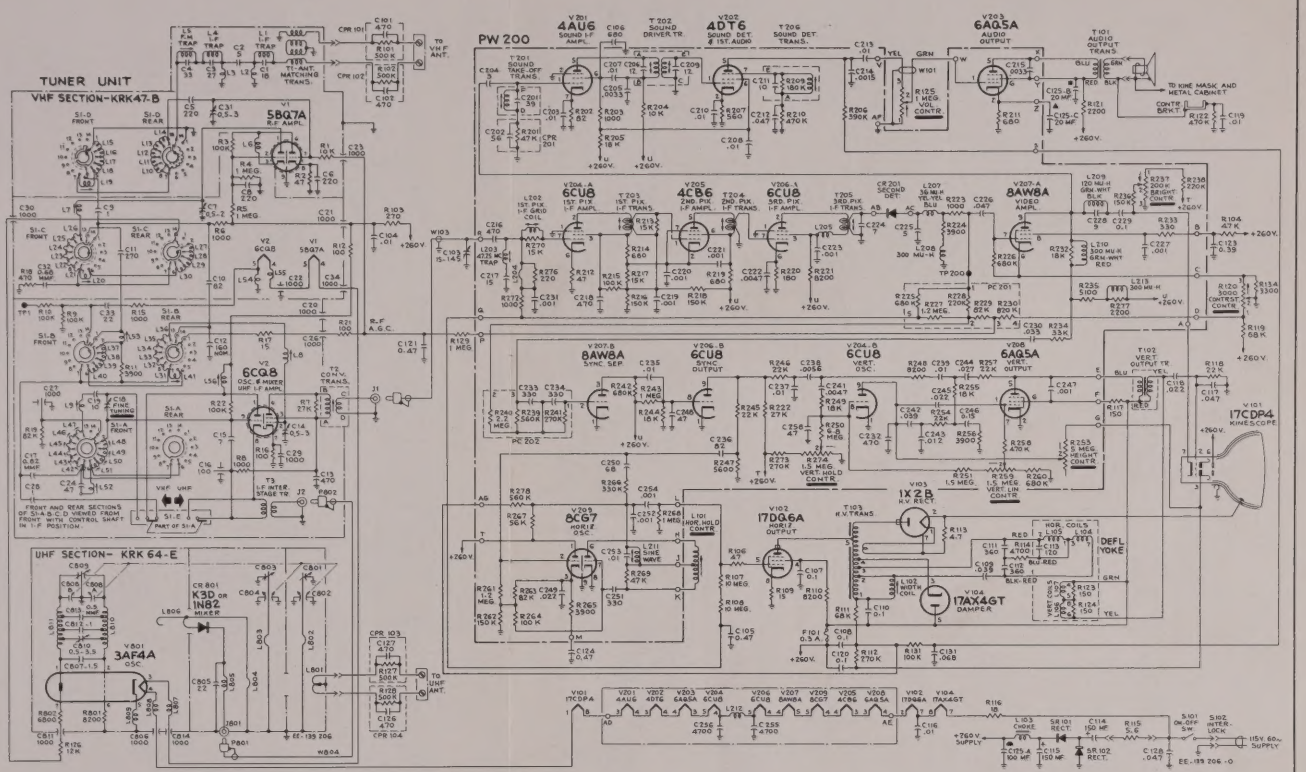
RCA

MODELS	CHASSIS
14PD8053, U	KCS111C, D
14PD8054, U	"
14PD8055, U	"
14PD8057, U	"
14PT8021, U	KCS111A, B
14PT8022, U	"



SCHEMATIC COURTESY OF RADIO CORPORTATION OF AMERICA

RCA MODELS	CHASSIS
17D8185, U	KCS109C, D
17D8186, U	"
17D8187, U	"
17PD8093, U	"
17PD8094, U	"
17PD8096, U	"
17PD8099, U	"
17PT8071, U	KCS109A, B
17PT8072, U	"



SCHEMATIC COURTESY OF RADIO CORPORTATION OF AMERICA

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

© Howard W. Sams & Co., Inc. 1957 SET 371 FOLDER 15-S